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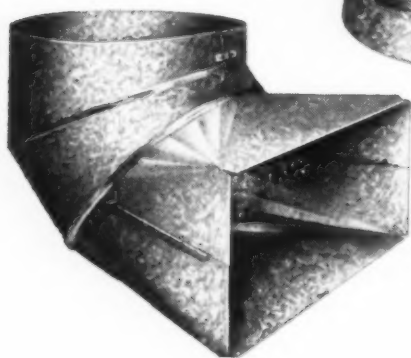
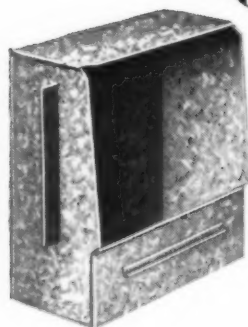
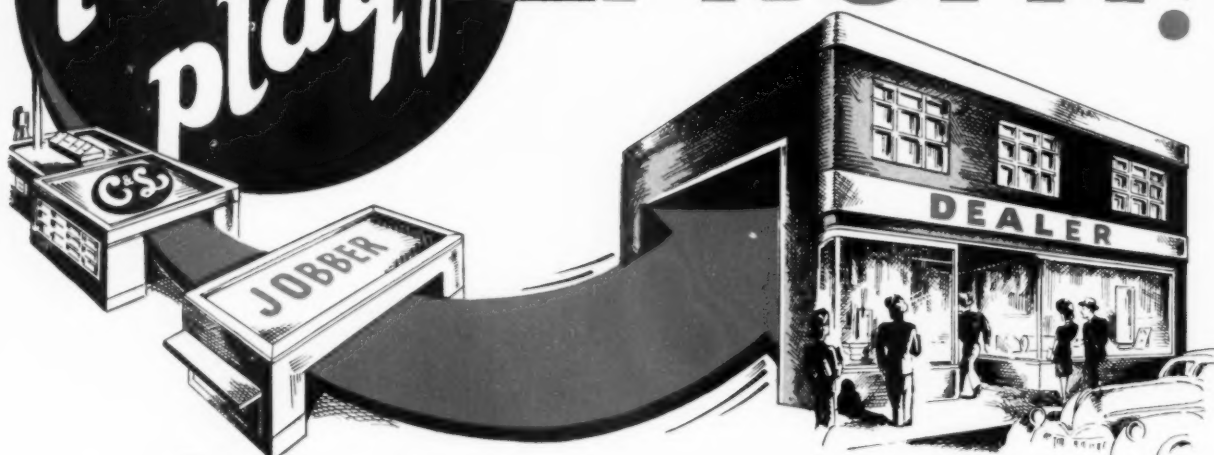
RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING--SHEET METAL CONTRACTING



AUGUST, 1947

AA Survey of Gas Situation	69
AA Reports on Oil Supply	76
Aluminum Ducts	83

a triple play for **PROFIT!**



Factory - to - jobber - to - you! That's the triple play that means profit to you. By ordering C&L Lamneck furnace pipe and fittings from your jobber, you get fast, dependable service, save warehousing costs and valuable floor space. Start *your* "triple play for profit" now by always specifying C&L LAMNECK *from your jobber!*

SAVE INSTALLATION TIME, TOO!

C&L Lamneck furnace pipe and fittings reduce installation time because they are designed for accurate on-the-job fit. Their uniform dimensions assure easy installation and tight connections.

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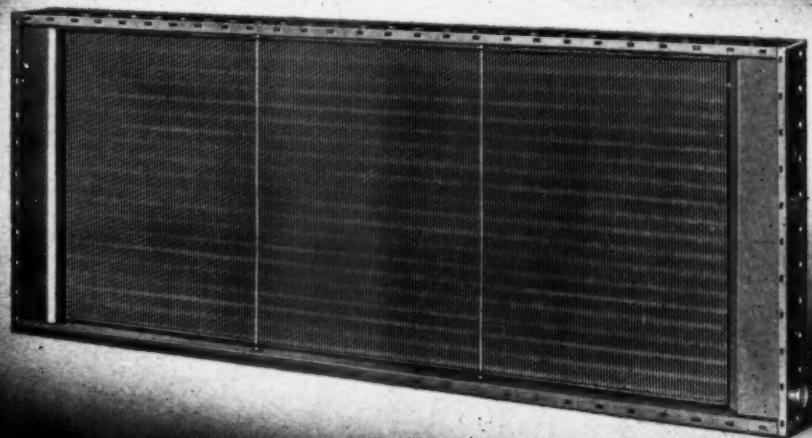


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**FURNACE PIPE
AND FITTINGS**

The Engineer Sees It Through...at



Coils . . . Designed for Every Requirement

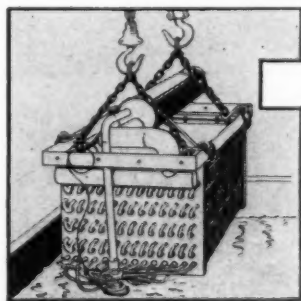
The complete line of usAIRco coils includes steam coils for heating, standard and non-freeze type, water coils for heating and cooling and direct expansion coils. These coils are properly designed, skillfully manufactured, and expertly engineered to the job requirement.

The usAIRco engineer follows through from design board through the installation. He specifies that coils are constructed for heavy service and dependability—he sees that you get a mechanically efficient tool. And most important, the usAIRco engineer helps you put the coil to work on your specific job.

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UNITED STATES AIR CONDITIONING CORPORATION
Minneapolis 14, Minnesota

Factory Representatives in Principal Cities



TESTED AND PROVED

Every coil takes a final plunge before going off to work for you. High pressure is applied to show up weak spots in construction. This test, and others, assure dependable performance on the job.



Plus

*Cooperative
Engineering Counsel*

Available to your air conditioning, heating or ventilating problems is the advice and counsel of the engineering staff of usAIRco. With a background of nearly twenty-five years, it is one of the most experienced in the industry. We invite you to use it freely and fully.

AMERICAN

with which are merged
FURNACES
SHEET METALS **Warm-Air Heating**

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

ARTISAN

In This Issue

J. D. Wilder, Editor

J. J. McCullough, Associate Editor A. A. Kennedy, Assistant Editor

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MUCH discussion is still being devoted to the question of whether the buyer's market will soon return or is already with us. No matter which of these situations prevails in your particular community if you are operating a sales force you will find Arthur Robert's article, "Ten Commandments of Successful Salesmanship"—Page 64, both interesting and profitable.

American Artisan has made an extensive survey of most of the public utilities in the country to determine their present rulings on the use of gas for space heating and the results have been tabulated and will be found on page 69. There are two conclusions reached by this survey that are important in view of widespread beliefs to the contrary. In the first place almost two-thirds of the utilities stated that they will take additional house heating load **now** and secondly it seems that in only about one-third of the areas covered are there any standards for the installation of gas equipment.

In the midst of all the hue and cry about the shortage of fuel oil AA has been curious as to the actual status of our supply of this vital material and the current demand. On page 76 is a discussion and analysis of the fuel oil picture for the coming winter. It is not as bleak as some "calamity-pwlers" would have you believe.

Founded 1880

AUGUST, 1947

Volume 116, No. 8

Old Man Oil Shortage

*Won't Bother You
If You Install*

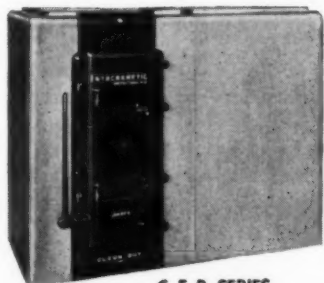
SYNCHROMATIC



America's BEST
FURNACE CAN BE EFFICIENTLY
OPERATED ON COAL UNTIL
OIL IS AVAILABLE

Synchromatic's
"HEAVYWEIGHT"
AND IS HE TOUGH!

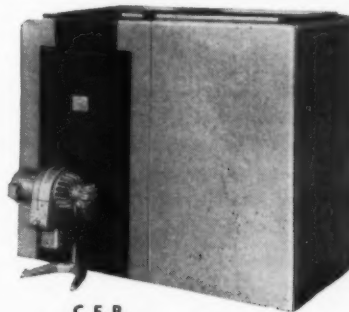
● CONVERSION FROM COAL TO OIL CAN BE EASILY
ACCOMPLISHED AT SMALL COST AND WILL GIVE YOU AN
OIL FURNACE SECOND TO NONE IN LOW OPERATING COST



C. F. B. SERIES
COAL HAND-FIRED
FORCED AIR

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HAVE YOUR CUSTOMER KEEP
HIS GRATES AFTER HE HAS
CONVERTED TO OIL IN CASE
SOME DARN FOOL TALKS
ANOTHER OIL SHORTAGE



C. F. B.
CONVERTED TO OIL FIRING

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The **100%**
Only
Mercury Switch
Equipped Controls

Mercoid warm air furnace control

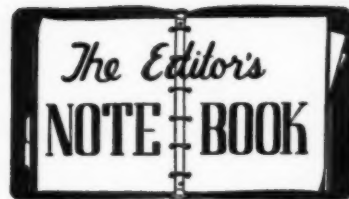
Mercoid Controls have a fine record in field experience.
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USE MERCROID CONTROLS

FOR OIL BURNERS, STOKERS, GAS BURNERS, REFRIGERATION,
AIR CONDITIONING AND VARIOUS INDUSTRIAL APPLICATIONS



Sixty Million Jobs

It wasn't very long ago when certain prognosticators found themselves out on a long limb by forecasting a period of prosperity with 60 million workers gainfully employed. The country had not come within shooting distance of such a figure—even during the war.

Now we have 60 million persons employed. President Truman has reported the U. S. as in a period of unprecedented prosperity. It is difficult to detect any signs of major recession in all the surveys currently being published. Yet there is a note of caution in many business surveys mostly based upon the fact that we seem to be on our way toward an inflation spiral repeating World War I history.

One reason for the peak level undoubtedly is the vast backlog of unfilled demand for new houses, for construction of all kinds, for practically every type of capital goods, for exports, for all sorts of products which go to make up America's scale of living.

With 60 million persons working at high incomes, only run away prices leading to a buyers' strike can, seemingly, bring the recession.

Vets Pay Own Bonus

More and more the shadow of impending tax burdens falls across war veterans—the 15,000,000 men and women who comprise about one-tenth of the population.

Chairman Bridges points out that the Senate Appropriations Committee is operating on the theory that "if the veterans stand for a lot of pressure ideas, they themselves eventually will be footing the bills."

Plain indication was given during hearings on the 1948 budget that the load of carrying veterans' benefits will be borne by the veterans themselves.

Red Tape Rolls On

Of the 1,000,000,000 forms and questionnaires which the Federal government yearly sends its citizens and businesses, 500,000,000 are for tax purposes. The rest run from 15,000-question reports which some utilities have to answer, to postcards asking citizens to go out in their yards and measure how much snow fell the night before.

Also notable are a four-page "Glue and Bone Black Report" asking manufacturers how many of the bones they use are flat-shin, round-shin or prairie bones; a three-pager "Daily Report of Catch by Fyke Nets" for fishermen to tell their catch of bullheads, carp and herring—and one for Indians to report how much "wild hay" they harvested last season!

New Features

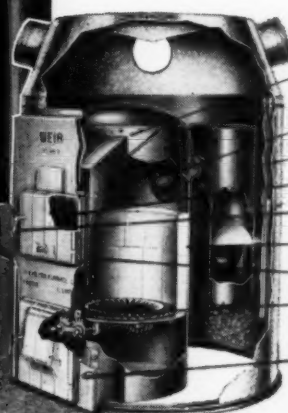
with exclusive sales appeal!



MODERN WEIR 'U' SERIES STEEL FURNACE

Sell the advantages of new Integral Heating Element* plus these time-tried exclusive Weir features!

*Pat. applied for



- Riveted and welded construction
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- Finger-touch door latch
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With the first major coal-fired furnace improvement in years, WEIR 'U' Series gives you powerful and exclusive sales appeals. You can sell amazing new cleanliness because it's permanently leak-proof! Greater efficiency and finer performance, too. Installation is simpler and easier. Steel front slides over Integral Heating Element* and casing hooks tightly to it. Write for franchise details.

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Weir 'UC' Series Air Conditioner provides all the advantages of 'U' Series furnace with Integral Heating Element* plus rectangular casing of modern design for air conditioning.

WEIR-MEYER means modern heat



Gas-fired
Hi-boy



Gas-fired
Air Conditioner



Gas-fired
Gravity



Oil-fired
Hi-boy



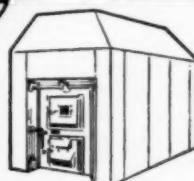
Oil-fired
Air Conditioner



Weir
Steel furnace



Coal-fired
Air Conditioner



Industrial & commercial
heating equipment



ROYAL JET-FLOW

Out-performs heating units costing three times as much

Jet-Flow is new . . . different . . . easy to sell . . . easy to install. A real profit maker . . . summer or winter. Royal Jet-Flow gives advantages of forced air circulation, plus ceiling radiation—truly two-way heating. Cost no more installed than conventional wall heaters or floor furnaces. Ideal for tract work.

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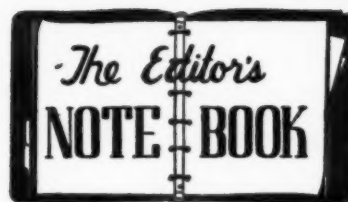
Please, send me, without obligation. Results of comparative heating tests; specifications and prices of Royal Jet-Flow.

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

AA847



The Gravity Furnace

Says Wm. L. McGrath, president, The Williamson Heater Company, "A big inventory of equipment has piled up in dealers', jobbers' and manufacturers' warehouses. Houses are not being built or sold. What's the answer?"

"The quality of the average house is inferior. A great deal of the selling price of these new homes is represented by push button gadgets, fancy bathrooms, and trimmings with the purpose of selling a house on its eye appeal and not on its practical utility or quality.

"Consider the heating equipment. Most plans are for automatic forced air, gas or oil, when a simple coal-fired gravity furnace may have been the most practical equipment for the small house at low cost which the prospective owner is seeking. Furthermore, such inexpensive heating units can always be converted for gas or oil when and as it becomes expedient."

Longer Vacations

The National Industrial Conference Board finds a decided trend toward granting extended vacations to long service employees. Nearly three times as many companies surveyed by the Conference Board in 1946 were giving three week vacations to wage earners with 15 years of service than were doing so in a group of similar size in 1940. Four times as many were giving three week vacations to salaried employees at completion of 15 years of service. Percentage of companies giving three week vacations after 25 years service had doubled.

Making Jobs

When Edison perfected his electric light in 1879, thousands of men employed in the gas-lighting industry and in making candles cried aloud that they would be jobless.

Wiser heads guided the gas industry into the use of gas for home cooking, as a source of industrial power—and today the industry employs many times the number it did when Edison's lamp created a new industry.

As for the candle makers, the standard of living in the U. S. has been so increased by the inventions and developments of men like Edison that more candles are now used for decorative purposes than were used 75 years ago when they were a necessity.

If the gloomy thinkers had been right, Edison with his 1,000-odd inventions would have been a national catastrophe. Instead, says Charles F. Kettering, inventor and research specialist, "industries with a total capitalization in excess of 20 billions of dollars and employing more than four million men and women can be directly traced to the things Edison did. That's a lot of doing!"

because

You don't often have the opportunity to earn extra profits as you do with Rheem . . .

Because with Rheem you can buy any or all of a *complete* line of appliances—Winter Air Conditioners; gravity and floor furnaces; stokers and stoker furnaces; console and wall heaters; water heaters; water softeners; evaporative coolers; attic fans; range boilers and tanks—for *all fuels*; gas, electricity, coal and oil...

Because you have only one contact to make, one source of supply, one credit negotiation...

Because you can buy a carload assortment of items at Rheem's big carload discount savings...

Because Rheem's 8, yes 8 large factories are tooled up to give you *immediate delivery* on all merchandise...

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All Gas Appliances are approved by the American Gas Association. Electrical Appliances approved by Underwriters' Laboratories, Inc. and Electrical Testing Laboratories.



Because Rheem's Floor-Finance Plan enables you to attract dealers with an arrangement that permits them to stock goods at only 10% down.

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Rheem offers you the outstanding opportunity today for increased sales and profits. Why not mail this coupon now and find out for yourself . . .



RHEEM

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I'd like to discuss the Rheem line
with your representative.

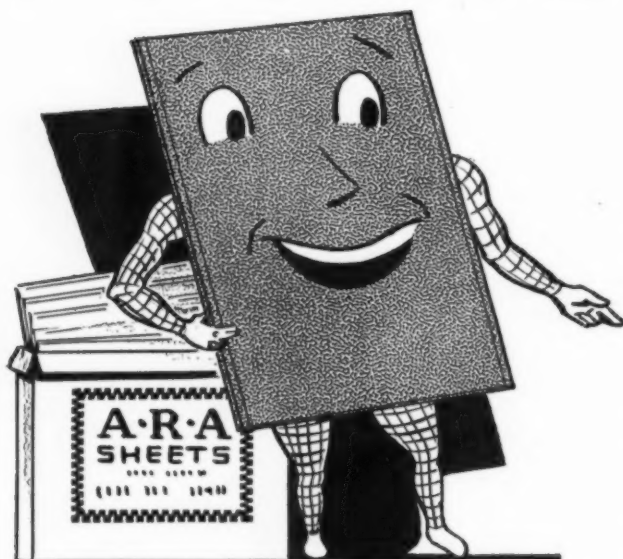
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COMPANY

ADDRESS

CITY STATE

Don't be FOOLED



A.R.A. SHEETS for COLD AIR RETURNS *are Better!*

USE A.R.A. SHEETS for cold air returns—for they are successfully designed to keep COSTS down and do a real job besides.

As you know one man can easily handle these uniform and rigid sheets that are just the right size to cover the joist spaces perfectly—furthermore these substantial moisture repellent sheets absorb noise and insulate—all at the same time. (K. .45 B.T.U.)

A.R.A. sheets give that trim finished look with their soft neutral color with no glare. Buy the "tried and proven" cold air return sheets—millions of square feet are in use and have been for years.

Buy the sheets that lay flat and stay clean looking—they don't buckle or twist—rust or look conspicuous on the ceiling.

CARTON CONTENTS

20 sheets 33" x 48" Per Carton

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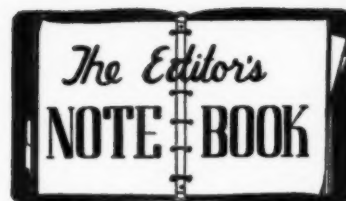
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Attitudes

A story going the rounds tells of an experiment of a group of industrial scientists who undertook to determine the effect of surroundings on women workers. They sought to find the answer to "fatigue."

They put a group of girls in a special room and first improved the lighting. Production went up. So they reduced the lighting, and reduced it again, and reduced it to the level of moonlight. But production held at top level. They increased number and length of rest periods. Production went up. They reduced and then stopped all rest periods, but production remained at top level. They shortened the working day and then lengthened it. Production went up and stayed there.

The scientists were stumped. The answer was found in "attitudes." The girls felt themselves something special. They were consulted on all problems. Their opinions were invited. Having that feeling, nothing which was done about lighting, rest periods, working hours could stop them from doing a full day's work. All these changes proved insignificant by comparison with the boost in morale which comes from the worker thinking himself an important member of a team really accomplishing something.

Incentives and Enterprise

Said Jim Lincoln of Lincoln Electric Company in a recent address—"We are in a new era of labor relations. We have removed the domination of management over labor and we have set up unemployment insurance so that the worker does not need to work any more. He will be supported by the state, without working, practically speaking, as long as he wishes.

"People, today, are attempting to have the government control everyone's destiny. People are looking to government to give social security, to give jobs, to take care of the individual in old age, to take care of everyone in sickness and accident, to assure that everyone will prosper at their job, that each one's income shall be sufficient and the cost of living controlled, to build homes and educate children. A majority of our citizens seem to feel this trend is justified.

"As government is given more responsibility it must change from a representative to a totalitarian form. We have gone a long way in that direction. More than 50 billion dollars will be spent in the next year for government—this will be the strongest influence in the life of every individual. We can be sure there will be some form of totalitarianism within a few years. The only hopeful aspect of the situation is that after we have had totalitarianism for one or more generations there will be a revolution which will bring back the freedom which we are now sacrificing."

ALWAYS READY...

for any one of 3 DIFFERENT JOBS

NO SET-UPS OR CHANGE-OVERS NECESSARY.

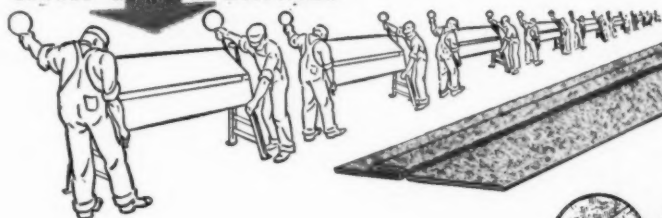


The Lockformer 22 with Power Flanger Attachment and showing Auxiliary rolls mounted on extended shafts; (built-in Pittsburgh Lock Rolls concealed by Flanger Mounting) other rolls stored in shelf provided.

DON'T confuse a Lockformer with a machine tool which has to be "set-up" for each specific job. Neither the Power Flanger Attachment nor the built-in Pittsburgh Lock Rolls on a Model 20 or 22, for instance, interfere with each other or with whatever set of Auxiliary Rolls you may also have on the Machine. Just flick the switch, and your Lockformer is IMMEDIATELY ready to form Pittsburghs, Right Angle Flangers (curved or straight) . . . AND . . . either Drive Cleats or Double Seam Locks, depending upon which set of Auxiliary Rolls you have mounted.

This versatility (3 machines in 1)—and the reduction of set-up time to a negligible minimum—is another reason why even the smallest shops find a Lockformer an exceedingly profitable investment. For making *one* seam, or *hundreds*, the LOCKFORMER saves you money — every time you use it.

ONE MAN WITH A LOCKFORMER CAN MAKE MORE PITTSBURGH LOCKS THAN SIXTEEN MEN WITH EIGHT BRAKES



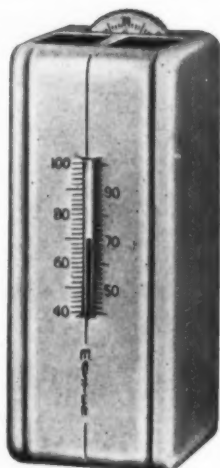
THE LOCKFORMER CO.

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MASTER

TEMPERATURE CONTROLS

Earn their Reputation



**A-23 Plain
Thermostat**

The policy of taking more pains than seems necessary in the manufacture of each individual part and inspection and test of each unit, pays in customer satisfaction . . . For this reason "Master" Controls are specified as replacements, and in more and more new construction.

as instruments by rendering precision-performance—every one!

Over a quarter century of knowing how and doing well has raised the name "MASTER" to a high position in the industry—a standard of long life, comfort and economy for your customers — friends and future sales for you.



**D-22A
Regulator
Switch**



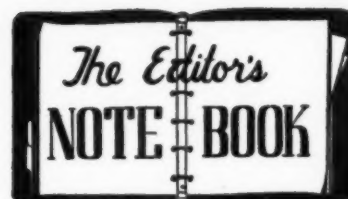
B-22 Motor

**Specify and install "Master".
It is more than a name. It is
a guarantee.**

The B-22 Master Control Motor is silent — powerful — low in current consumption.

They are available now for your installations.

WHITE MANUFACTURING COMPANY
2368 University Avenue • St. Paul, Minnesota



Building Cooperation

Instead of waiting for Washington to do something about the building industry, evidence is accumulating that in some cities the building industry is taking things into its own hands and attempting to solve problems through cooperative effort.

For example, in New York City, Catholic Cardinal Spellman called labor and builders together and asked for cooperation to keep a 25 million program going if he decided to start. He obtained agreement. Labor, on its part, agreed to eliminate jurisdictional strikes and limitations on workers' output.

In San Francisco building contractors got together and agreed not to buy materials on the grey market and material suppliers agreed to do their best to furnish all the materials required. The National Association of Real Estate Boards has sent a letter urging members to call conferences with labor leaders in as many cities as possible to see if agreement can be reached on ways and means of holding down costs.

That these moves are necessary, seems agreed—as the National City Bank of New York recently declared—"unless excessive building costs are lowered through cooperation, they will be lowered by means of unemployment and depression."

Slow as Molasses

An expression of long standing indicating something exceedingly slow in movement is "slow as molasses." Now the scientists have come up with proof that the expression has sound foundation in fact by testing molasses in a "viscosimeter" and report that a small cupful of molasses requires 3 minutes and 41 seconds to travel one foot compared with water, milk and kerosene which requires only 4 seconds.

Time required for the fluid to flow through a small hole in the cup provides a measure of its viscosity. Manufacturers of materials like paint and enamel are reported interested and sheet metal manufacturers may soon find their finishing sene which require only 4 seconds.

Portal—Really

Locating a new portal close to where coal is dug, a coal mining company in St. Clairsville, O., has equipped it with a passenger elevator, electric lighted corridor—and a revolving door opening practically onto the coal seam.

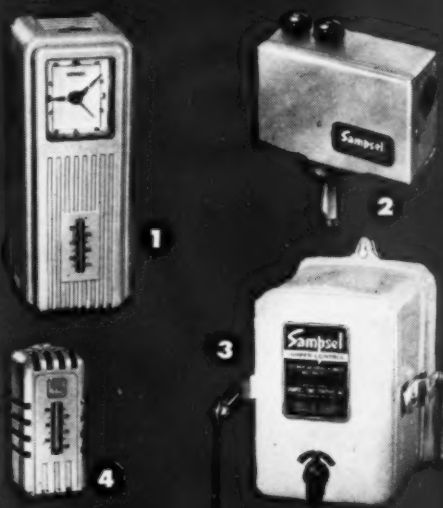
The portal building itself contains a 25-shower wash room, dressing room for the 600 employees, drinking fountain, modern toilet facilities, lounging room, an elaborate restaurant serving hot meals—and ultra-violet lamps which minimize the dangers of spreading air-borne cold and other germs.

my boss is smart to push Sampsel Automatic Controls

Yes, it's sure good business to sell products like these! Sampsel makes a hit with me because every item is easy to install—the most accessible I've ever seen. There's room to work and see what you're doing. With Sampsel controls, it's easy to do a good job fast.



Typical Sampsel Controls



1. Sampsel Day-Night Thermostat
2. Sampsel Steam Limit Control
3. Sampsel Damper Motor Control
4. Sampsel Standard Thermostat



Home owners are pleased when I tell them these Sampsel controls are accurate and long lived. Yes, they're glad to know about Sampsel's trouble-free dependability.



I can spot good design a mile away. Those Sampsel engineers really know their stuff! It's simple and rugged. It's modern design and plenty sound, built to do the job!



I hear Sampsel uses precision testing equipment to be sure all materials meet their high quality-standards. Every small part is minutely inspected, too, before controls are assembled.



And another thing—Sampsel controls are built in a modern efficient factory. Yes, precision production assures longer life, finer performance. Sampsel really builds 'em.

Standard and Day-Night Thermostats
Steam, Hot Water, and Warm Air Limit
Controls—Transformer and Relay Combina-
tions—Stoker, Oil, and Gas Controls—Pump
Switches—Time Controlled Switches

You'll be smart to push Sampsel Automatic Controls. My boss says there's a lot of satisfaction in dealing with Sampsel. They bend over backwards to treat you right. Tie this in with the dependability and finer performance of Sampsel Controls and have customer satisfaction everytime. Better write Sampsel today.

Sampsel Time Control, Inc. • Spring Valley, Illinois
Canadian Sales Distributor: Pease Foundry Co., Ltd., Toronto 1, Canada



46 • 1947 • 1948 • 1949 • 19



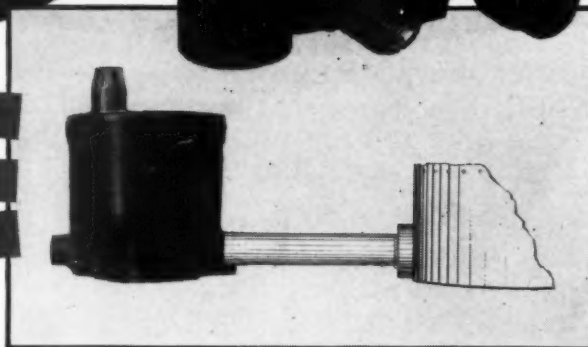
**Years of Building call for
BETTER HEATING
"DETROIT" CRC 246
The Revolutionary New
OIL HEATER CONTROL**

ADVANCED IN PRINCIPLE

SIMPLER IN APPLICATION

IMPROVED IN APPEARANCE

SUPERIOR IN PERFORMANCE



Conservative estimates indicate that it will be 5 to 10 years before we catch up on residential building. Homes must be built by the million.

People want the cleanliness and reliability of oil heat.

The best way to give it to them is with space heaters, furnaces, ranges, water heaters, etc., equipped with "Detroit" Float Valves.

The CRC 246 Float Valve is a giant stride forward in control of fuel supply to vaporizing burners. Some of its advantages are listed below:

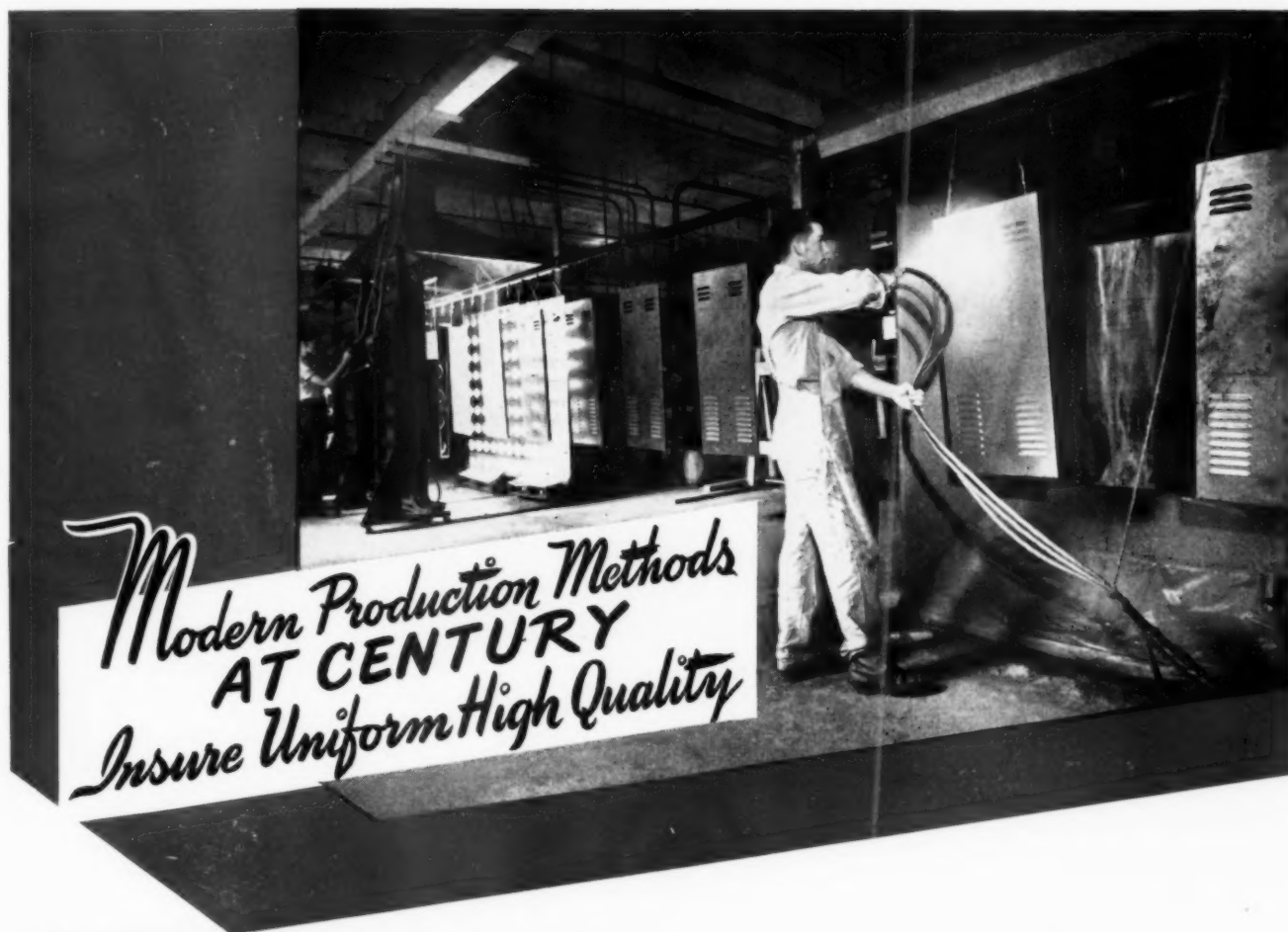
- Connects directly to burner nipple. Eliminates tee, fittings, and tubing.
- Can be tilted without affecting fuel flow. Leveling by eye is satisfactory.
- Flow rate to burner constant with inlet heads from 2 inches to 84 inches. Permits placing bottom of tank flush with top of valve and eliminates "dying fire" when fuel supply is low.
- Safety mechanism trips from level of fuel in burner as well as level in valve. Less pooling of fuel in burner if fire is extinguished.
- Magnetic trip mechanism is positive. Will not trip from vibration.
- Low flows are extremely accurate and consistent.
- Fully temperature-compensated. Uniform fuel flow regardless of fuel temperature.
- Simpler to service.

DETROIT LUBRICATOR COMPANY General Offices: 5900 TRUMBULL AVENUE
DETROIT 8, MICHIGAN



Division of **AMERICAN RADIATOR & Standard Sanitary** CORPORATION
Canadian Representatives — RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators



*Modern Production Methods
AT CENTURY
Insure Uniform High Quality*



MODEL "R" FURNACE UNIT

Domestic water units and boiler burner units have been temporarily discontinued from our line due to material shortages.

THE Century line of oil-fired heating equipment achieves its excellence through exacting specifications which are met by precision workmanship and constant inspection.

Quality furnace production is speeded by modern assembly lines and conveyor installations like the one shown here. Spray painting, with quick infrared drying makes rapid packing possible—thus stepping up the delivery of finished units to dealers. Yes, even sales appeal is added the modern way at Century!

Years of research, scientific advancement and manufacturing skill—all contribute toward making Century equipment a leader in the field. Inquire about a profitable Century franchise, now.

CENTURY
Engineering Corporation
CEDAR RAPIDS, IOWA

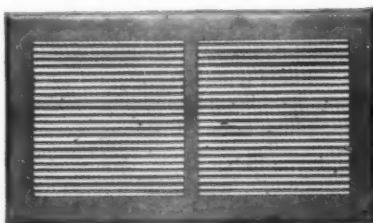
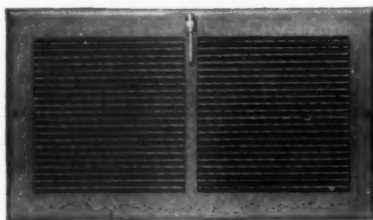
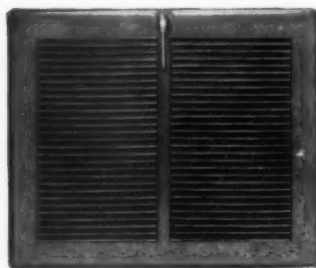
OIL BURNERS
HUMIDIFIERS

BOILER-BURNER UNITS
WATER HEATERS

WARM AIR FURNACES
AIR CONDITIONING

Char-Gale

MODERN REGISTERS



Char-Gale registers are designed for the modern house. Their quiet good looks are in harmony with today's architecture and furniture; they are engineered for maximum efficiency. Char-Gale means high quality, yet modern production methods make Char-Gale quality available for the mass market.

Registers are the visible part of your installation, proclaiming your workmanship in every room of the house. To make sure that your registers give a favorable report of you, install Char-Gale.

Take no chances; specify "Char-Gale" to your jobber

PREFABRICATED
DUCTS AND FITTINGS
FOR WARM AIR
HEATING

CHAR-GALE

Minneapolis

CHAR-GALE MFG. CO.

Omaha

**BUILT
WITH CARE**

**SHOWN
WITH PRIDE**

**SOLD
WITH
CONFIDENCE**

Another Product of
CHAR-GALE Metal
Craftsmen

Who Also
Produce the Finest
in ALUMINUM
fittings

ALUMINUM LOWEST PRICES in HISTORY

ROLLS !



.... SHEETS !

Aluminum saves time on the job and in transit. Each pound goes as far as three pounds of heavier sheet metal. Aluminum is hard enough to be durable, soft enough to be worked on any type of sheet metal working equipment. Millions of pounds of aluminum have been used in the last six months for joist linings, ducts and fittings.

We stock 24"-26"-30"-33"-36" widths—it can be used for fittings as well as for joist lining.

PRICE LIST

Effective August 10, 1947

Thickness .025 (approximately the same as 24 gauge steel)

Pounds	Full rolls 500 lbs.	100-lb. rolls	Sheets	Pounds	Full rolls 500 lbs.	100-lb. rolls	Sheets
30,000 and over	\$0.221	\$0.225	\$0.228	2,000 to 4,999	\$0.241	\$0.246	\$0.248
20,000 to 29,999	.223	.227	.230	1,000 to 1,999	.251	.256	.258
10,000 to 19,999	.226	.230	.233	500 to 999	.281	.285	.288
5,000 to 9,999	.231	.235	.238	100295	.312

NET TEN DAYS Prices are per pound for quantities shown

Prices subject to change without notice.

Write or Wire Your Orders to

**IMMEDIATE
DELIVERY**

PREFABRICATED
DUCTS AND FITTINGS
FOR WARM AIR
HEATING

CHAR-GALE

**IMMEDIATE
DELIVERY**

MINNEAPOLIS

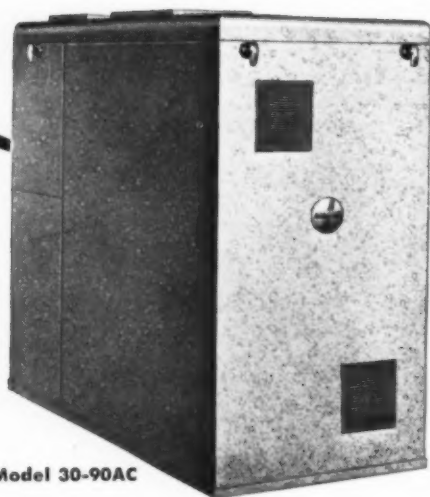
CHAR-GALE MFG. CO.

OMAHA

For all

3

**GAS-
OIL-
COAL**



Model 30-90AC

WITH the Niagara line of winter air conditioners and gravity-type warm-air furnaces, burning gas, oil or coal, you can meet ALL requirements for the heating of homes ANYWHERE. The Niagara line is backed by over 55 years of experience in the manufacture of residential heating equipment . . . It is a name that has earned wide reputation for high-quality construction and economical, dependable operation—quality that builds profits and prestige for the heating contractor.

***The New NIAGARA Oil-Fired* WINTER AIR CONDITIONER**

As modern as tomorrow is the new Model 30-90AC Niagara Oil-Fired Winter Air Conditioner—a high-quality unit that brings automatic comfort to even the most remote home.

Model 30-90AC burns the lower-priced No. 3 fuel oil, with a maximum capacity of 90,000 BTU at registers. The burner is of the pressure (gun) type, complete with fan switch, limit switch, thermostat, and intermittent protectorelay. The combustion chamber is precast insulating ceramic. Burner vesti-

bule is 19½" long, 15½" wide. A quiet rubber-mounted thermal-protected motor, ¼ h.p., operates the 11" belt-and-pulley blower. Standard equipment includes two 16x25x2" air filters, replaceable cartridge-type oil filter, barometric draft regulator, and humidifier.

Model 30-90AC is 27¾" wide, 56⅞" long, and 52½" high; green Hammerloid enamel cabinet with painted inner liners. May be purchased also less oil burner.

**NIAGARA
Gas-Fired
Winter Air
CONDITIONER**

for the Compact House or Apartment

Designed especially for installation in utility rooms and apartments, the new Niagara Model 10-75VAC is an unusually compact winter air conditioner that gives low-cost operation. Occupies less than 5 sq. ft. of floor space. Capacity, 75,000 BTU Input, 60,000 BTU Output at bonnet.

The combustion chamber, side radiator and flue pipe are made of heavy-gauge Toncan iron, giving heat radiating qualities that insure long life. The blower, filter, and enclosed controls, mounted at the front, are easy of access through removable front panels. The air inlet may be cut in on either side, rear or bottom.

Model 10-75VAC is available with burners for natural, manufactured or mixed gases and is shipped as a package unit, completely assembled. Finish is gunmetal Hammerloid enamel.

Model 10-75VAC

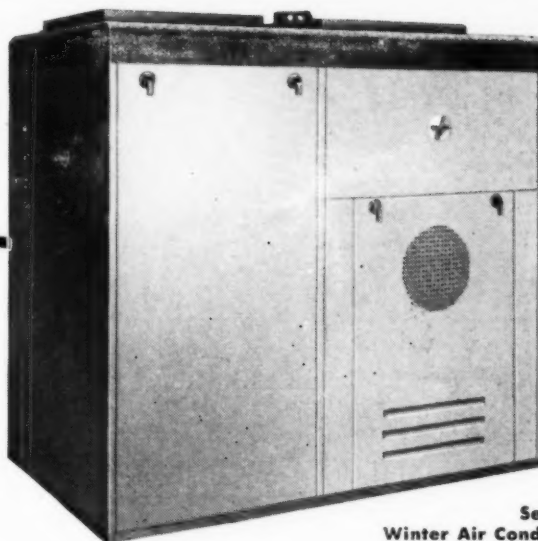


NIAGARA GRAVITY AND WINTER

Call on **NIAGARA**

SERIES 20 **NIAGARA** Gas-Fired WINTER AIR CONDITIONER

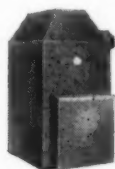
Many years of pleasing, economical service have proved the outstanding efficiency and long life of the Series 20 Niagara Gas-Fired Winter Air Conditioner—available in five sizes. The high praises of users of these units are due largely to the performance of the distinctive cast-iron heat exchanger, made in our own foundries. The combustion chamber is made of copper-chrome-iron alloy, to withstand high temperatures for years and years of service, and the radiating sections are cast iron. Green Hammerloid enamel cabinets.



Series 20
Winter Air Conditioner



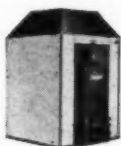
Series 20 Gas-Fired Gravity
Cast Iron



Series 10 Gas-Fired Gravity
Steel



Coal-Fired
Gravity
Cast Iron



Coal-Fired
Gravity
Cast Iron



Coal-Fired
Gravity
Steel

Gas-Fired GRAVITY UNITS Coal-Fired **NIAGARA**

FURNACES

The complete Niagara line includes Series 20 Gas-Fired Gravity Furnaces with cast-iron heat exchanger and Series 10 Gas-Fired Gravity Furnaces with steel combustion chamber.

Niagara Coal-Fired Furnaces are scientifically designed to assure total combustion. Furnaces with cast-iron heat exchangers are available in both round and square styles, and there is also a steel model either round or square casing.

Write Today...

for the complete NIAGARA story. Learn what is inside and back of Niagara furnaces. When you install Niagara, you associate with Success—and you can meet ANY requirement, regardless of location.

NIAGARA FURNACE DIVISION

THE FOREST CITY FOUNDRIES COMPANY

2500 WEST 27th STREET

CLEVELAND 13, OHIO

AIR CONDITIONING UNITS **NIAGARA**



**Swing into the
furnace repair
season with profit-
able, dependable . . .**

FIRELINE

**Here are two other
Profit Producers**



**Ironset
Asbestos
Furnace
Cement**

The high-quality cement for setting up new furnaces and recementing old ones. Withstands higher temperatures. Will not crack, shrink, bloat, or blister. Makes your work more permanent. Try it on your next job and see how Ironset builds up your reputation for permanent, gas-tight work. You can't afford to use any cement but the best.

**Fire-Hearth
Castable**

The ideal refractory for setting stokers, forming precast combustion chambers and baffle tile. Easily installed: just mix with water, pour into place, and trowel smooth. That's all there is to it.



If you're going to bag profits when the rush begins in fall firepot repairs, Fireline is the pinch-hitter you need. Here's why it is a great profit producer:

Quickly installed: Fireline comes in moist, plastic form, ready to use. You pound the Fireline material into place, then smooth it off—that's all. The work is done through the firing door—dis-mantling the furnace is unnecessary. You can handle more repair jobs with the same labor—make a higher percentage of profit.

No castings needed: You don't lose work and profits for lack of firepot castings—not with Fireline! Fireline forms a modern refractory lining one to 1½ in. thick around the entire firepot, sealing cracks and holes. Your men keep busy despite casting shortages.

Countless prospects: Every warm-air plant is a prospect for you. Where firepot castings are still in good condition, Fireline is sold to preserve the castings and save fuel. In steel furnaces, Fireline can be moulded to any shape to replace or repair refractory tile. It is ideal for stoker hearths and oil burner combustion chambers.

Fireline heating specialties are carried by leading jobbers.
Write for free descriptive literature, prices, and discounts.

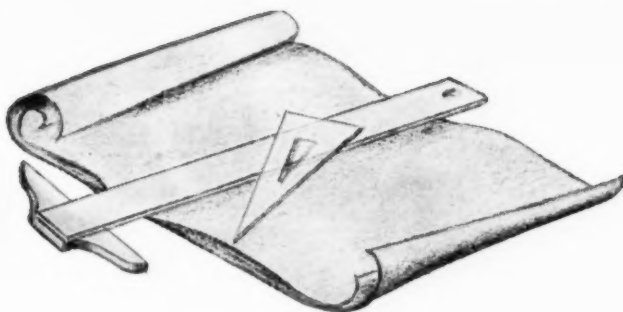
FIRELINE STOVE & FURNACE LINING CO.

1816 Kingsbury St.

(Dept. H)

Chicago 14, Ill.

PLAN YOUR PROFIT

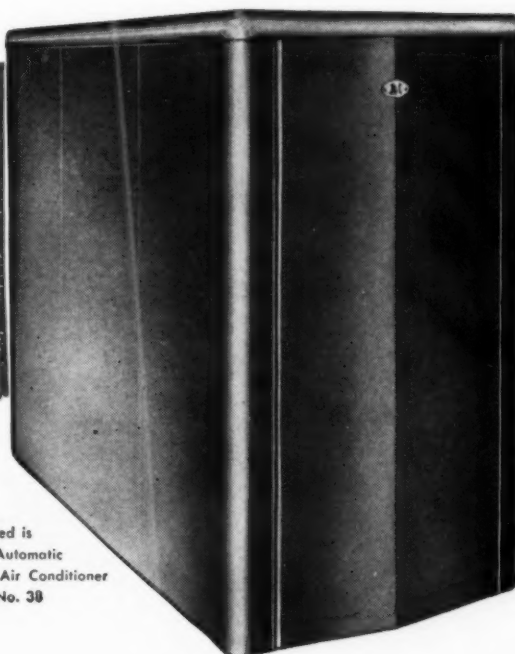


SPECIFY AND PROVIDE



THE J & C LINE*	
MODEL	Btu @ BONNET
G2-70	52,500
OL3-85	85,000
G5-130	104,000
AL590	106,000
MF15	120,000
CO150	150,000
CO195	195,000
MF30	240,000
MF48	350,000
MF63	500,000
MF1000	800,000
CC2500	2,000,000
CC4750	3,800,000

*Above are representative models in the J & C line that includes more than 100 types and sizes.



Illustrated is
J & C Automatic
Winter Air Conditioner
Model No. 38

J & C PROVIDES OVER 100 WAYS TO DRAW DOLLAR (\$\$\$) SIGNS INTO YOUR PROFIT PLANS

WITH OVER 100 MODELS from 52,500 to 3,800,000 Btu's per hour at bonnet... the J & C line matches most any heating requirement and "rings up" more sales for you.

Watch your dollar volume grow when you tie-in with J & C... the most complete line in the warm air heating field.

J & C dealers and contractors get in on more of the heating business because J & C Winter Air Condi-

tioners and J & C "PowerRated" Heaters are adaptable to Panelaire Heating or any approved installation. The "PowerRated" Heater is just the answer for greater heating requirements or for processing.

Units are available for coal, oil or gas firing... either gravity or forced air... and mechanical or hand fired.

When J & C is specified... there is no substitute.

A PRODUCT OF 
JACKSON & CHURCH CO., SAGINAW, MICH.



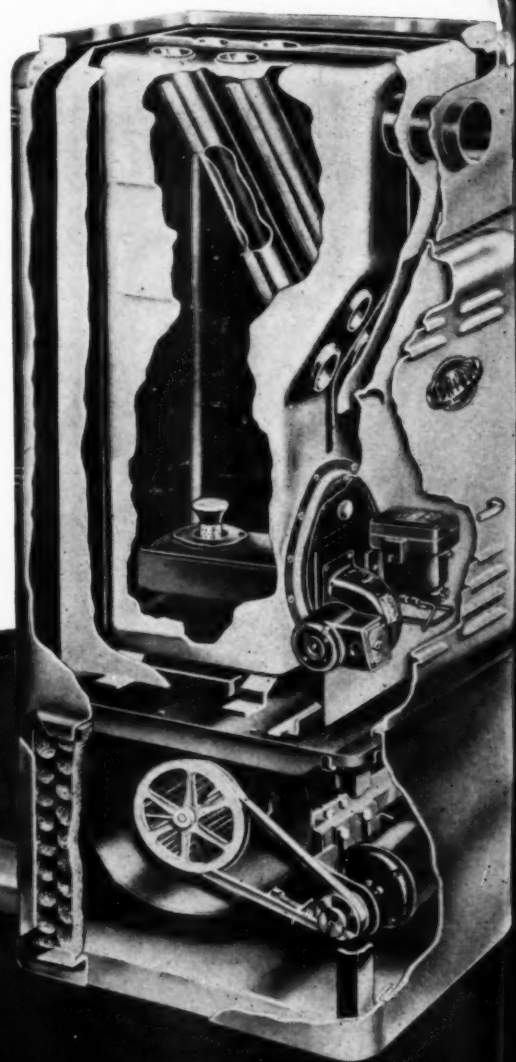
☐ WANT **OIL** FIRED FURNACES?

☐ WANT **GAS** FIRED FURNACES?

MOR-SUN

offers you the NEW

U-4-OV with
Vaporizing Oil Burner...



... combining the nationally popular Mor-Sun heavy gauge, mass precision produced Utility forced warm air furnace, with a "Ball Frame", forced draft, vaporizing burner--Underwriters' approved and completely automatic.

The U-4-OV supplies the demand for a high quality vaporizing unit and at the same time offers the option of change over to gas heat when restrictions are lifted, in cases where your customer feels he may want to make this change.

The U-4-OV is so designed that the OV burner and front plate can be removed and replaced by the MOR-SUN A. G. A. approved gas burner assembly and front plate with little labor, no other change, and no loss in operating efficiency. While our tests lead us to believe that home owners will be thoroughly satisfied with the performance of the U-4-OV, this changeover feature will give them the satisfaction of optional fuel without major expenditure for conversion.

For ease of installation, the U-4-OV is shipped completely assembled.



"The Sun Never Sets with MOR-SUN!"

MORRISON STEEL PRODUCTS, Inc., Buffalo 7, N.Y.



WYSONG
&
MILES CO.

NO. 410



FOR MORE PRODUCTION AT LOWER COST

HERE is the versatile machine tool that does many sheet metal jobs quickly and profitably. A convenient, well proportioned, rugged machine, easy to operate and to adjust, for burring, turning, wiring, beading, crimping, elbow edging, slitting and other operations. Power drive enables operator to use both hands to manipulate work. Starting switch mounted on frame within easy reach. Foot or hand operated cup-type clutch can be locked for continuous motion. Upper shaft adjusts vertically by crank screw or foot treadle; laterally by convenient screws. Interchangeable rolls. Motor, clutch and gears all enclosed within semi-steel frame.

Save valuable production time in your plant with the multi-purpose No. 410 Combination Sheet Metal Machine. WYSONG and MILES 100% jig and fixture construction is your guarantee of uniformly superior machines.

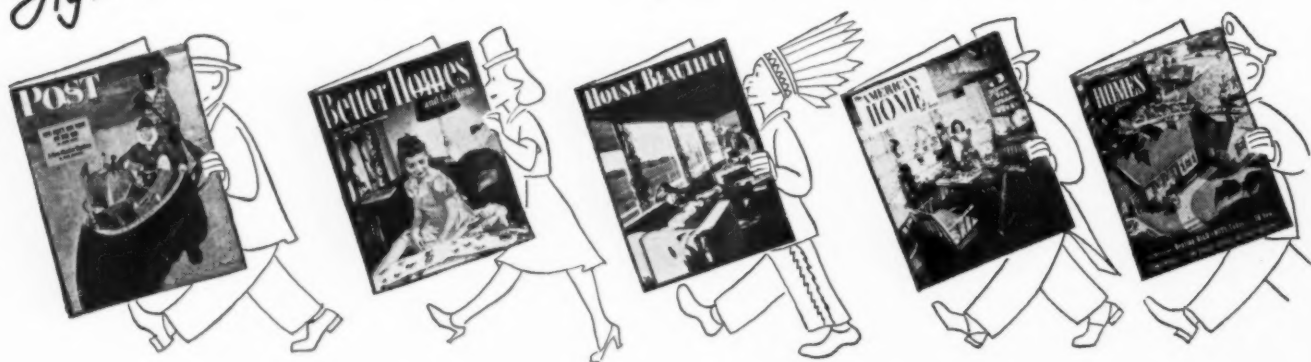
Write for detailed information.

WYSONG and MILES CO.

GREENSBORO, NORTH CAROLINA

DESIGNERS AND BUILDERS OF MACHINE TOOLS FOR OVER 45 YEARS

Again this Fall ...in these Popular National Magazines



NEW **DUSTSTOP*** replacement advertisements



will build **Big Business** for **YOU!**

Yes, one or two sets of replacement air filters every year for over two million domestic forced-warm-air furnaces mean big business for Dust-Stop dealers, because nationally advertised Dust-Stops are the accepted standard equipment on the majority of these heating units. And, important, too, every Dust-Stop order is a prospective furnace repair service call.

New, free promotion material is ready now to help *you* cash in on the big 1947 Fall Dust-Stop Campaign. Send your order to your distributor today for new folders, mailing cards, doorknob hangers, blower labels, newspaper ad mats, radio spot scripts and the new Fall store display.



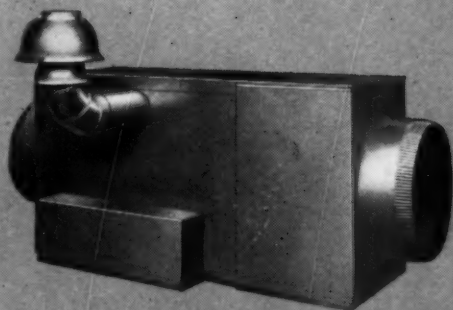
OWENS-CORNING FIBERGLAS CORPORATION
"Your partner whose Actions speak louder than words"



**TIE IN!
WITH THIS
FREE
DISPLAY**

two new fast sellers

NORMAN SOUTHERNER CENTRAL HEATING SYSTEM



MODEL FU 30, BTU Output 24,000
Size: 13" x 16" x 29".

MODEL FU 60 or FA 60, BTU Output
48,000. Size: 13" x 16" x 40".

LARGER MODEL available approximately
September, 1947.

FU—Underfloor.
FA—Attic.

This new compact unit has 101 "all climate" applications for heating small homes and commercial buildings. Easily installed over the ceiling, under the floor, in a closet or back room. Saves on costly duct and chimney work. Fully automatic forced air. Burns natural, mixed, manufactured or LP Gas.

101 HEATING APPLICATIONS INCLUDING

SERVICE STATIONS
SMALL HOMES
GARAGES
PORTABLE BUILDINGS

OFFICES
FARM BUILDINGS
SMALL BUILDINGS
TRAILERS

SUMMER COTTAGES
RECREATION ROOMS
STORES
SPOT HEATING

NORMAN HYDROXYLATING* OIL CONVERSION BURNER

*Features an improved principle of vaporizing oil faster and more completely to produce a cleaner, hotter gas flame. Easily installed in most furnaces and boilers. Adjustable up to a maximum capacity of 1 gallon per hour. Attractive green baked-on enamel finish with bright aluminum trim.



DEALERS! DISTRIBUTORS! DESIRABLE FRANCHISES OPEN. WRITE FOR INFORMATION

Norman PRODUCTS CO.

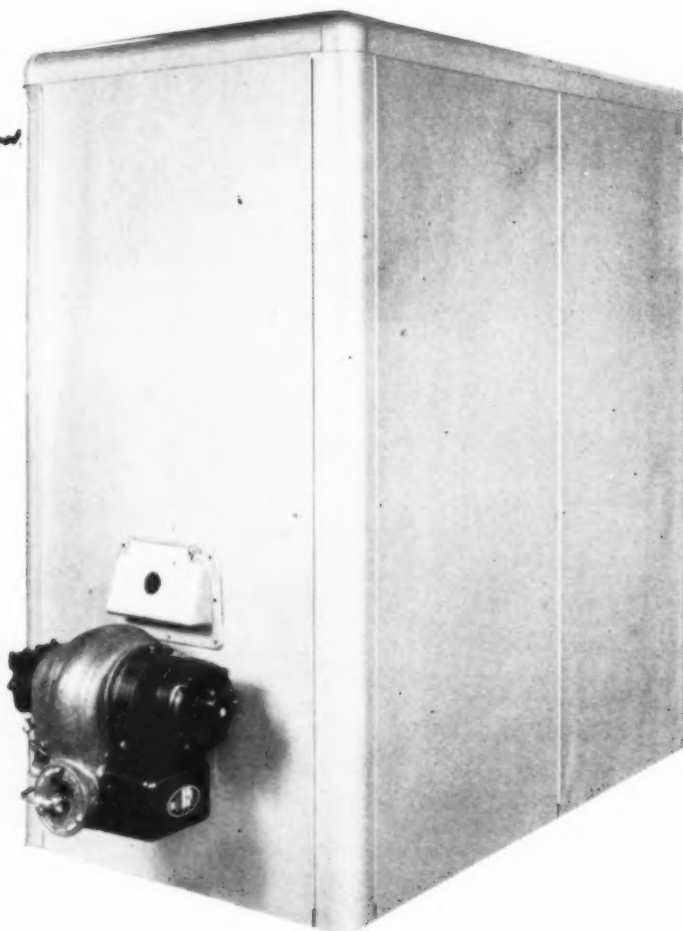
1150 CHESAPEAKE AVENUE, COLUMBUS 12, OHIO

E. A. Norman, Jr., President D. D. Piper, Exec. Vice Pres. in Charge of Sales



CONVERSION GAS BURNER • CONVERSION OIL BURNER • GAS WINTER AIR CONDITIONER • GAS GRAVITY FURNACE
SOUTHERNER 101 FURNACE FOR NATURAL, MANUFACTURED, MIXED AND LP GAS

Available **NOW!**

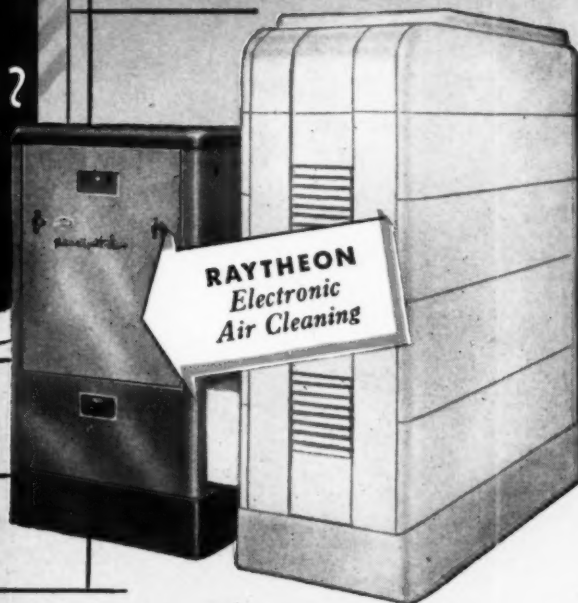


The new WISE cast iron oil burning unit

It's ready now for immediate delivery. Available for either forced air (illustrated) or gravity in four sizes running from one gallon to 1.75 gallon input, giving a Btu output at the bonnet of from 110,000 up to 200,000. This new Wise product is supplied complete with burner and is a natural for the winter air conditioning market. Please write us today for details.

THE WISE FURNACE CO.
AKRON 8, OHIO

HEAT MAKE US
WARM
CLEAN AIR MAKE
US HEALTHY



Ask your manufacturer or jobber about the Raytheon Precipitator... available now as an integral part of furnace or air conditioner, or as a separate unit for connecting to existing installations.

Sell BOTH for INDOOR COMFORT!

No matter how your competitors doll it up and dish it out, automatic coal-oil-gas-fired steam, vapor, hot water or radiant heat is still only *heat*... the stuff that's good to cook with but no good to *breathe*!

So get out and sell *your* product... **INDOOR COMFORT**... *live, healthy air* that's constantly circulated, warmed or cooled, humidified or de-humidified, and *electronically cleaned*!

Yes, *electronically cleaned* by the Raytheon Precipitator! Easily installed as part of a new system or added to an existing one, this amazing new unit removes all airborne dust, soot, pollen... and even tobacco smoke (which is only 1/250,000th inch in diameter)... assures new breathing comfort and a *dust-free home*!

Ask your warm air furnace or air conditioning manufacturer or jobber about the Raytheon Precipitator... available now for new or existing installations.

Write for Illustrated Bulletin DL-P-509.



DEALERS! DISTRIBUTORS! AGENTS!

Valuable territories now open.
Write today for detailed information.

RAYTHEON

Excellence in Electronics

RAYTHEON MANUFACTURING COMPANY

COMMERCIAL PRODUCTS DIVISION

WALTHAM 54, MASSACHUSETTS

*Industrial and Commercial Electronic Equipment,
Broadcast Equipment, Tubes and Accessories*

*Sales Offices: Atlanta, Boston, Chicago,
Cleveland, Louisville, New York*

Janitrol again rings the bell!



YOU CAN REPLACE
EVEN THOUGH YOU
CAN'T CONVERT

WITH TIMELY
MERCHANDISING CAMPAIGN

The "EVEN GREATER COMFORT" PROGRAM

Designed to help dealers and utilities
in areas where gas heating equipment
sales are restricted.

Everything you need to "UP-GRADE" SALES!



- ★ PLANS FOR ORGANIZING
- ★ PROSPECT SURVEY PLAN
- ★ PRESENTATION MANUAL
- ★ DIRECT MAIL
- ★ RADIO SPOTS
- ★ NEWSPAPER ADVERTISING

THIS IS ONLY
PART OF A
COMPLETE KIT

• Right now is the time to put this "sure-fire" plan into action!

To retain a profitable gas heating equipment business in the face of actual or anticipated restrictions, this brand new "Up-Grading" replacement campaign will work wonders for you.

This new Janitrol plan shows how you can find the

owners of obsolete, worn-out, improperly designed or installed burners . . . that's the starting point . . . upgrading owners to better, more modern and efficient Janitrol equipment.

Every step in the campaign from the formulation of utility-dealer cooperative activity to the actual sale of new equipment is clearly and completely described in the "Even Greater Comfort" book. Don't delay, get prepared to put this "Profit-Plan" to work before the coming heating season—Wire or write today so you can review the plan and available materials immediately.

Janitrol
SURFACE COMBUSTION CORPORATION, TOLEDO 1, OHIO



... for jobs like this ... and this

... and this
—nothing
equals Stainless Steel



• The nice thing about these profitable, reputation-building jobs is that almost any sheet metal shop can handle them—working with U·S·S Stainless Steel.

This perfected service-tested Stainless is so uniform . . . in composition . . . in finish . . . and fabricating qualities . . . that you can fabricate it readily and easily with the same equipment you now

use for working galvanized steel.

Once you learn the slightly different procedures that are necessary in fabricating with Stainless you'll be surprised how smoothly U·S·S Stainless Steel jobs will go through your shop.

Our new book—The Fabrication of U·S·S Stainless and Heat Resisting Steels—explains simply and clearly how

to get the best results in working with Stainless. Use it as a guide and cash in on today's unprecedented demand for Stainless Steel in equipment of all kinds where its beauty, endurance and low ultimate cost are eagerly desired.

Build with U·S·S Stainless and your shop can be kept busy—not only now, but in the future.

U·S·S STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS • PIPE • TUBES • WIRE • SPECIAL SECTIONS



AMERICAN STEEL & WIRE COMPANY, *Cleveland, Chicago and New York*
CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*

COLUMBIA STEEL COMPANY, *San Francisco*

NATIONAL TUBE COMPANY, *Pittsburgh*

TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*

United States Steel Supply Company, *Chicago, Warehouse Distributors*

United States Steel Export Company, *New York*

7-376

LISTEN TO . . . *The Theatre Guild on the Air*, presented every Sunday evening by United States Steel, American Broadcasting Company, coast-to-coast network. Consult your newspaper for time and station.

UNITED STATES STEEL

14 FEATURES that make **GILLEN** the Outstanding **FLOOR FURNACE** **VALUE** on **TODAY'S MARKET!**

1 Sturdily built floor grille.

2 Non-corrosive outer casing. Strong construction and non-corrosive finish assures long life for this dependable furnace.

3 Floor level oil flow control rod. A key is furnished to extend through the floor grille to operate this rod, in manual operation. Oil flow is controlled by room thermostat on automatic models.

4 Oil shut off valve. Provided to break connection in the oil line from control valve when servicing the combustion chamber is required.

5 Floor level reset rod. Automatically trips off in case control should overflow.

6 Liner curved to parallel the outer surfaces of the two heating drums assures proper and adequate cold and warm air circulation.

7 Inner lining around the combustion chamber, gives added heating surface and full heat absorption. Assures a cool outside casing temperature.

8 Constant level oil control valve, including safety limit control and anti-flooding device, assures proper metering of the fuel to the burner.

9 Combustion chamber. Removable for servicing the burner and valve from floor level.

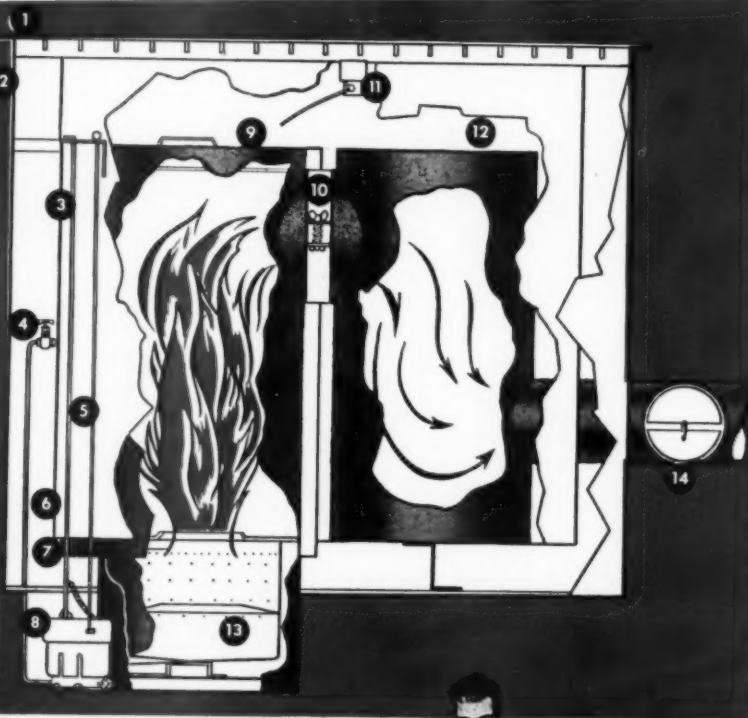
10 Removable band to seal the connection between the combustion chamber and the radiator. By loosening the band, the two heating drums can be separated.

11 Safety limit control bulb bracket.

12 Large radiator, for maximum heating surface. Specifically designed to obtain maximum heating efficiency from flow of hot gases.

13 Special burner that operates cleanly on low natural draft.

14 Automatic draft regulator, set at .06 inches.



Fully Approved by Underwriters' Laboratories!

No doubt about it . . . **GILLEN** leads in the small home heating field! Leads in design, construction, performance . . . meets maximum heating requirements of average 4-5 room homes . . . fully approved by Underwriters' Laboratories. Leads in economy . . . low first cost, low operating cost, low maintenance cost. Leads in sales and profits, too . . . the lowest priced most efficient floor furnace being manufactured today! Sold exclusively through authorized distributors under liberal franchise agreement. Write today for complete details.



**Exclusive
Feature Per-
mits Servicing
From Floor
Level!**

Just remove floor grille, break oil connection, and loosen sealing band. Then lift up and the entire combustion chamber comes out for quick, convenient servicing!



J. L. GILLEN CO.
DOWAGIAC MICHIGAN

THE OUTSTANDING EAVES TROUGH IMPROVEMENT

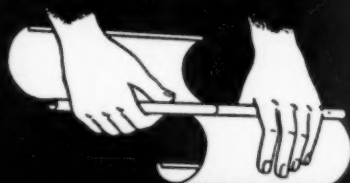
of all Time!



BERGER
REG. U. S. PAT. OFF.
SNAPTITE
EAVES TROUGH

**SO EASY TO ERECT...
 SAVES TIME...
 SAVES MONEY, TOO!**

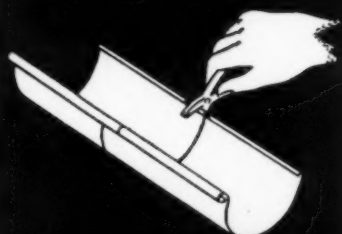
... SLIP



... SNAP



... SEAL



With Berger SNAPTITE Eaves Trough, erection is just as easy and simple as the sketches at the left indicate. You slip two joints together . . . snap the bead edges into place . . . pinch the bead edges together, and solder if desired. No tacking is necessary. And the result is a strong, rigid installation that lasts.

Another important feature: Accurate measurement is unnecessary with SNAPTITE. Because it slips together, it can be lapped as much as needed. No slip joint trough is required.

See your local distributor about SNAPTITE Eaves Trough—also Berger Conductor Pipe and Accessories, Roofing of all types, and Metal Lath. Berger is playing no favorites in distributing its products.

**BERGER MANUFACTURING DIVISION
 REPUBLIC STEEL CORPORATION
 CANTON 5, OHIO**

Warehouses in Boston, Philadelphia and St. Louis



it's **QUICK**
it's **EASY**

TO INSTALL OR REMOVE THE COMPLETE BURNER

from ANY Luxaire

Vaporizing Pot Type Oil Fired Unit



↑ Just disconnect fuel line—remove 8 sheet metal screws . . . a cabinet panel . . . loosen 2 thumb screws—and the entire burner assembly can be lifted out bodily. It's just that quick and easy.

Underwriters' Laboratories
approved.



↑ Series VG
Oil Fired, Steel
Gravity Unit

Series VH
Oil Fired, Steel Utility
Air Conditioning Unit



→ Series VA
Oil Fired Steel
Air Conditioning Unit



Sturdy, enameled steel cabinets . . . cabinet floors with channel supports that do away with basement platforms and grouting. . . Steel heating elements with automatic, submerged arc welded seams . . . high, low flame baffles assure smokeless combustion . . . stainless steel flame deflector—easily removed.

. . . these "stand-out" features make it easy for you to sell, install and service Luxaire vaporizing pot-type oil fired units.

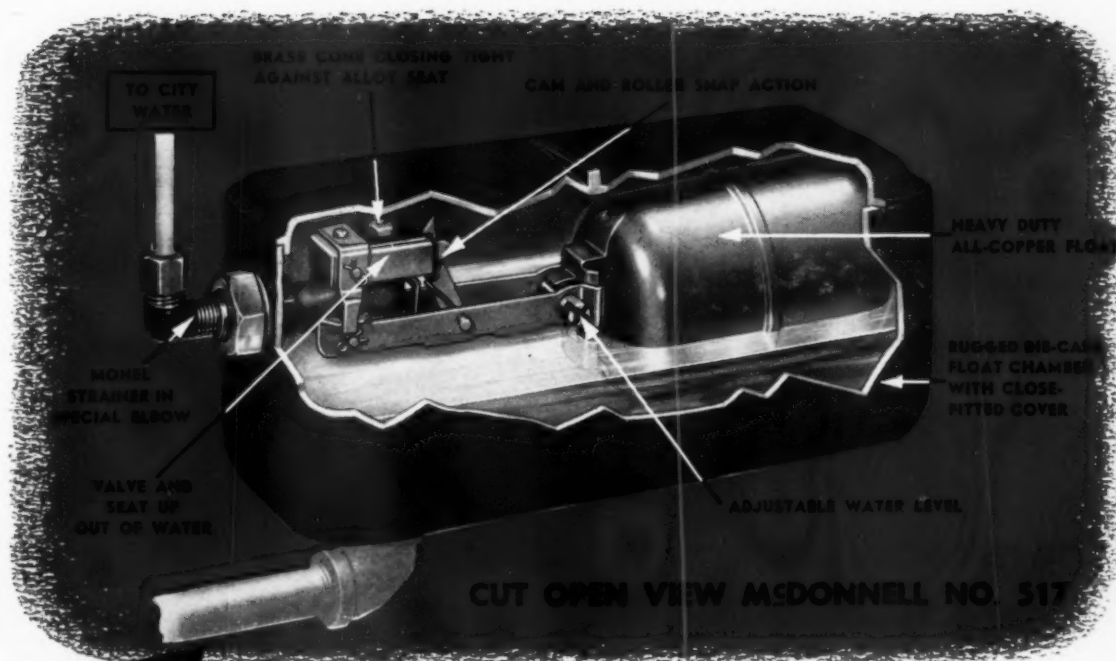
THE C.A. OLSEN MANUFACTURING COMPANY

Luxaire



HEATING & AIR CONDITIONING UNITS

ELYRIA 12, OHIO

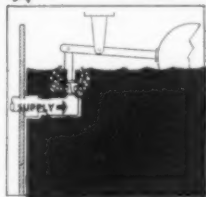


THERE'S NOTHING LIKE IT!...

A man who knows his float valves examined the McDonnell Float Valve pictured here and said, "Looks like you are the first people to take this matter seriously!"

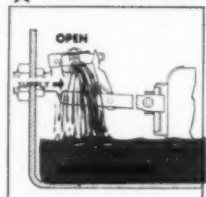
You quickly discover how well this description fits the McDonnell No. 417 when you compare it with other valves. Everything about it—in both design and construction—shows that its development was one more chapter in the story of "Doing One Thing Well"—to you who use them, a *vital* thing.

★ NO DRIBBLING



By its very nature, the conventional float valve is sure, sooner or later, to get into trouble. Basically, it is simply a float and arm attached to a valve which cracks open and dribbles water into the pan as soon as the water level begins to fall. Obviously, such a valve is rarely wide open. It simply attempts to maintain a level by constantly dribbling water. Exposed, as it is, to high temperature, it is soon plugged up with lime or is clogged by debris and foreign matter as you know only too well.

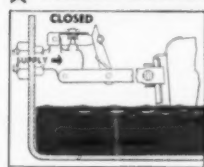
★ INSTEAD OF DRIBBLING — SNAP ACTION!



tion. Moreover it seats tight against water supply pressures up to 150 lbs.

The biggest difference in the McDonnell Float Valve is the valve mechanism which gets away from this dribbling action. Its ingenious cam and roller construction snaps it wide open when the float drops $\frac{1}{4}$ inch. This opens up a full stream of water . . . thoroughly flushes out the seat. When the water level is restored, the cone seats with the same positive snap action.

★ TIGHT CLOSING VALVE—UP ABOVE WATER



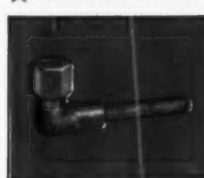
This positive "snap action" alone would place the No. 417 in a class all its own, but it is only proof-number-one that there is nothing else like it. In the current model the valve and seat are up out of the water. The brass cone is firmly thrust into an alloy seat to provide a water-tight closure.

★ FLOAT LEVEL ADJUSTABLE



A heavy gauge copper float (not plated) gives ample float power, and an outstanding feature is the slide which permits raising or lowering the float by merely loosening one screw so that the water level in the pan can be adjusted.

★ MONEL STRAINER PROTECTS VALVE



An extra precaution to assure positive operation is the monel strainer mounted in a special compression fitting connected to the city water supply, where it can be easily removed and cleaned. With the valve located out of the water, with the sluicing action of a full stream to keep it clean, and with the added safeguard of the strainer in the water supply line, you can be sure *this* valve *will* work right.

★ INDIVIDUALLY TESTED

Everyone of these valves is individually tested. Their feeding action is tested and their ability to seat against water pressure up to 150 lbs. is tested. Leading manufacturers of warm air furnaces, air washing equipment, dehumidifying apparatus, and cooling equipment have adopted the McDonnell Snap Action Valve. They are available without float chamber (No. 417) or mounted in a sturdy die-cast chamber with neat, well-fitted cover (No. 517). In these two forms they are adaptable to every requirement for a valve of this kind. Ask for details.

MCDONNELL & MILLER, INC., 1318 Wrigley Building, Chicago 11, Illinois

Doing One  Thing Well

MCDONNELL SNAP ACTION FLOAT VALVE

... with the ingenious

More Prospects Become Customers

when you handle
RICHMOND WINTER AIR CONDITIONERS



HOUSEWIFE: "It's smart... the Dulux white enamel finish brightens up my home—matches laundry equipment."



STOREKEEPER: "It's quiet... doesn't disturb shoppers because blower fan floats on rubber."



ENGINEER: "It's thrifty—lasts longer... cast-in-one-piece chrome-iron heat exchanger withstands higher temperatures, limit control prevents overheating."

Versatile, the Richmond Winter Air Conditioner fits in approximately 4 to 6 sq. ft., upstairs or down, in home, office or shop. One single unit heats, humidifies, filters, and circulates air. Has easily renewed spun glass filters. Completely packaged, quickly installed... profit-eating call-backs cut to a minimum. Carries both AGA approval and a one-year replacement guarantee. Get full details from your wholesaler or write Richmond Radiator Company, 19 East 47th Street, New York 17, N. Y., for name of nearest Richmond wholesaler.



SHIPPED COMPLETELY ASSEMBLED

Winter Air Conditioner: Four sizes: 66,000, 90,000, 115,000 and 140,000 btu input. Easily installed. May be converted to floor-type heater by addition of special cowl.



FACTORIES AT METUCHEN, N. J., MONACA, PA., NEW CASTLE, DEL., UNIONTOWN, PA. (2)

RICHMOND RADIATOR COMPANY

Affiliate Reynolds Metals Co.

Enamelled Cast Iron Ware • Vitreous China • Perma-Gloss • Gas Boilers • Gas Winter Air Conditioners • Gas Gravity Furnaces • Radiators



3

0

WEIRZ

47

RS

MBLED

66,000,
Easily
r-type

VY
s Co.

August, 1947

Weirton

COLD-ROLLED STRIP

Also Produced in
WEIRZIN Electrolytic Zinc-Coated
Cold-Rolled Strip

In your quest for production efficiency, you can count on Weirton strip to serve you as a willing partner, ever ready to ease manufacturing difficulties and to effect economies. Because of its uniformity in composition and thickness, and its exceptional drawing and forming qualities, Weirton strip can be depended on to speed production and to reduce spoilage and scrap losses.

WEIRTON STEEL CO.

WEIRTON, W. VA. Sales Offices in Principal Cities

Division of NATIONAL STEEL CORPORATION Executive Offices Pittsburgh, Pa.



Can you assure your customers of *year 'round* heating comfort?

for better heating **ALLways**
install *Magic Dial* thermostat

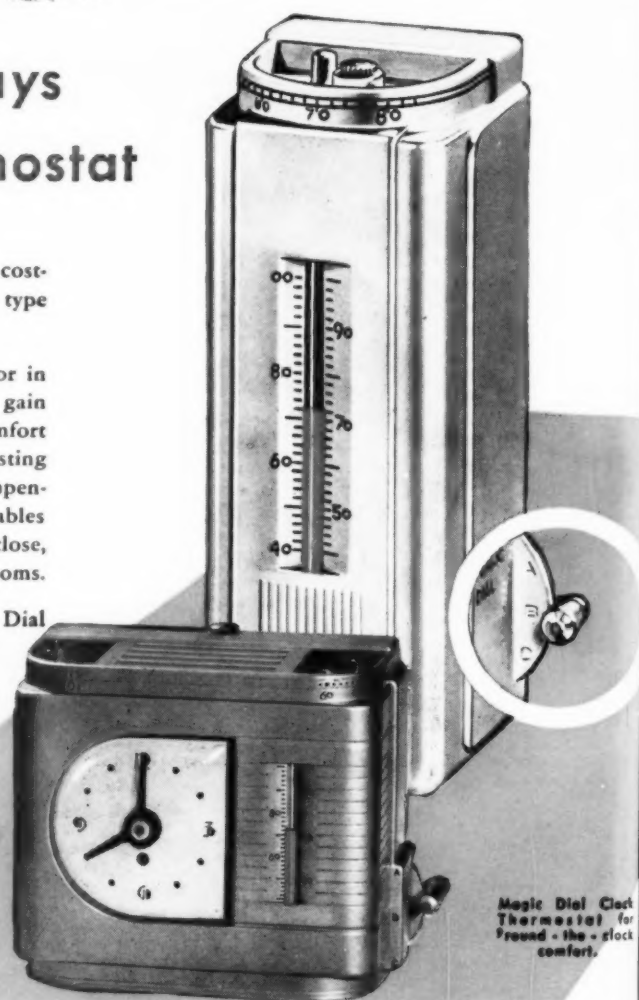
The Magic Dial Thermostat overcomes heating complaints, reduces costly service calls and assures complete customer satisfaction with any type of heating system.

The Magic Dial Thermostat is not just an ordinary thermostat, for in addition to providing extremely accurate temperature control, users gain the *extra* advantage of "tuning" their heating plant to individual comfort preferences — preventing "overshooting" or "undershooting", adjusting for unusual weather conditions or building characteristics, and compensating for peculiarities in the heating system. Magic Dial tuning enables the user himself to control the length of burner operation, for close, accurate temperature regulation and better heat distribution to all rooms.

You cannot compete if your controls are obsolete! The Magic Dial Thermostat puts you out in front, with exclusive advantages that provide the finest in home heating comfort. That is why the Magic Dial and other famous Perfex Twin Contact Controls are consistently pre-selected to carry the trade names of the leading automatic heating manufacturers.

PERFEX CORPORATION, MILWAUKEE 7, WIS.

Perfex Controls Ltd., Toronto 1, Ont.



Magic Dial Clock
Thermostat for
'round-the-clock
comfort.

TUNE THE

Magic Dial

FOR GREATEST COMFORT



The "A" position provides short burner operation periods . . . desirable for close temperature regulation, particularly during mild weather.

Moving toward "B" position lengthens the burner operation periods to adjust for characteristics of individual heating system.

Moving toward the "C" position further increases burner operation periods for better heat distribution to remote rooms.

PERFEX

TWIN CONTACT CONTROLS

MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE MARK NAME
OF LEADING PRODUCERS OF AUTOMATIC HEATING SYSTEMS AND APPLIANCES

A COMPLETE LINE OF TWIN CONTACT CONTROLS FOR ALL TYPES OF HEATING



Protected Territory

with the

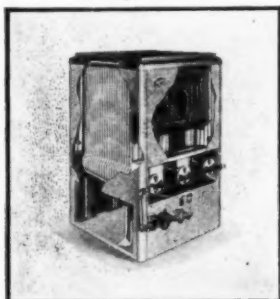
COMPLETE RYBOLT LINE



Rybolt Series 15
Cast Iron Coal-Fired
Gravity Furnace



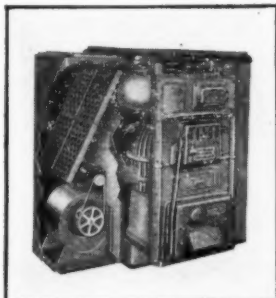
Rybolt Series RH 71
Steel Coal-Fired
Gravity Furnace



Rybolt Series RG 53
Cast Gas-Fired
Gravity Furnace



Rybolt Series RG 54
Cast Gas-Fired
Winter Air Conditioner



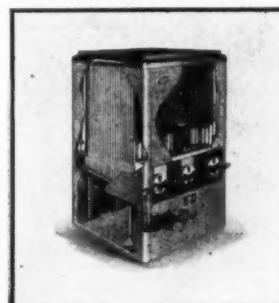
Rybolt Series 151
Cast Coal-Fired
Winter Air Conditioner



Rybolt Series RH 76
Steel Coal-Fired
Winter Air Conditioner



Rybolt Series RG 52
Steel Gas-Fired
Winter Air Conditioner



Rybolt Series RG 51
Steel Gas-Fired
Gravity Furnace



THE RYBOLT HEATER COMPANY

615 MILLER STREET



ASHLAND, OHIO

SPEEDY

deliveries on U·S·S Stainless Steel



Now you can get all the Stainless Steel you want. This means that we have available for your needs—No. 2B finish sheets of proven excellence; No. 4 finish sheets of uniform quality; bars that meet high standards of machinability; plates in sizes up to 120" wide and 360" long; tubing—both welded and seamless; pipe, angles, channels and welding electrodes in all standard grades and specifications.

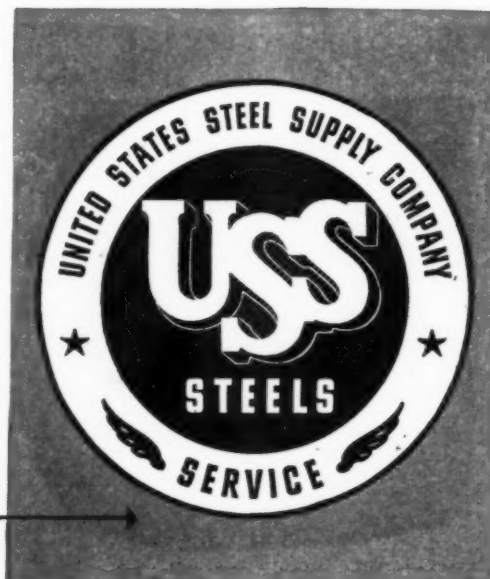
If you need help in selecting the grades of U·S·S Stainless that will best suit different kinds of service or fabricate best on your equipment, our engineers will gladly assist you. Free technical bulletins and booklets covering the varied uses for U·S·S Stainless are also yours for the asking.

Once a month we publish an up-to-date Inventory Bulletin, listing our Stainless stocks. If you use Stainless Steel and are not receiving these bulletins, write us.

So, whether you want help or want to give us an order, phone, wire or write our nearest warehouse and you'll get prompt, courteous service.

Symbol of Service

FOR STEEL USERS



UNITED STATES STEEL SUPPLY COMPANY

CHICAGO (90)	1319 Wabansia Ave., P. O. Box MM	BRUNSWICK 2000	NEWARK (1), N. J.	Foot of Bessemer St., P. O. Box 479	Bigelow 3-5920 REctor 2-6560 BErgen 3-1614
BALTIMORE (3)	Bush & Wicomico Sts., P. O. Box 2036	Gillmor 3100	PITTSBURGH (12)	1281 Reedsdale Street, N. S.	CEdar 7780
BOSTON	176 Lincoln St., (Allston 34), P. O. Box 42	STAdium 9400	ST. LOUIS (3)	21st & Gratiot Sts., P. O. Box 27	MAIn 5235
CLEVELAND (14)	1394 East 39th St.	HEnderson 5750	TWIN CITY	2545 University Ave., St. Paul (4), Minn.	NEstor 7311
MILWAUKEE (1)	4027 West Scott St., P. O. Box 2045	MITchell 7500			

UNITED STATES STEEL

efficiency

with
**OIL
GAS
COAL**



VICTOR



MORE HOT METAL HEATS MORE AIR

Air to be heated, must rub on a hot surface. Victor patented FINS supply the additional hot metal for heating air quickly with less fuel.

CONVERSION IS SIMPLE AND SURE WITH VICTOR FURNACES . . .

Victor DeLuxe boiler-plate steel furnaces are welded and riveted for permanent tightness. The long, *EFFECTIVE* fire travel through the triple flue radiator (see illustration above), plus Victor Patented heat radiating FINS make them ideal for conversion from coal to gas or oil . . . with practically no loss in efficiency. When you sell a Victor . . . you sell the best in life-long heating satisfaction and Victor's exclusive, patented features make Victors easy to sell.

**Investigate VICTOR . . . a
Victor franchise will make
you more money.**

FURNACES • OIL BURNERS • STOKERS • GAS BURNERS • BLOWERS • ACCESSORIES

HALL-NEAL FURNACE Co.

VICTOR Quality Furnaces Since 1890

1322 N. CAPITOL AVENUE • INDIANAPOLIS 7, INDIANA

Over **16,000,000** Petro sales messages
in 29 publications



help build oil burner sales for you
EVERY MONTH!

Petro national advertising runs in leading magazines and newspapers . . . reaches millions of homeowners the country over . . . influences every worthwhile oil burner prospect in YOUR territory.

Month after month Petro sales messages keep working. Educating *your* important buyers. Pre-selling them *for you*.

Decide NOW to cash in on this hard-hitting sales promotion. Get set to handle the Petro line of oil burning equipment. Distributed through established heating wholesalers. Write!

Petro oil burners, in pressure-atomizing models, use from 1 to 18 gallons of domestic fuel oil per hour . . . and in rotary cup models, from 11 to 145 gallons of heavy commercial-industrial oils per hour.



PETRO
REG. U. S. PAT. OFF.

MAKERS OF GOOD OIL BURNING EQUIPMENT
SINCE 1903

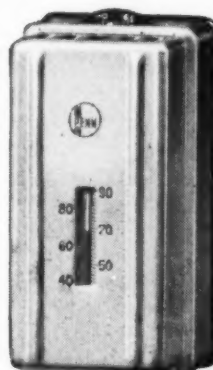
PETROLEUM HEAT AND POWER COMPANY • STAMFORD, CONNECTICUT

Petro Refineries in: CORPUS CHRISTI AND PORT ISABEL, TEXAS. Fuel Oil Bulk Plants and Distribution Terminals in: BOSTON • PROVIDENCE • STAMFORD • MT. VERNON • NEW YORK • MINEOLA • BROOKLYN • NEWARK • PHILADELPHIA • BALTIMORE • WASHINGTON • CHICAGO

are all automatic controls ALIKE?



DAY-NITE TEM-CLOCK



TEMROL

● All present-day automatic controls are good. They all perform similar functions in controlling automatic heating systems. *But there are differences in controls just as there are differences in other mechanical products.*

They differ in appearance, in mechanical and electrical design, in the materials used, in ease of installation, in their operating dependability and *in their accuracy in controlling temperatures.*

For example, PENN Temtrol . . . the room thermostat with *the heat-anticipating feature* . . . assures maximum heating comfort by keeping room temperatures extremely close to the selected level. This is made possible by a design that introduces "artificial" heat within the thermostat. Thus the thermostat

has the uncanny ability to *anticipate* heat requirements *before* room temperatures change materially.

Then, there's PENN Tem-Clock. This electric clock provides *fully automatic control* of night set-back temperature . . . resulting in greater comfort, convenience and fuel economy. It can be installed in any room desired by the purchaser, *regardless of the location of the thermostat.*

"Extras" like these are found in all PENN heating controls . . . primary controls, limit switches and relays. On your future heating jobs, use PENN Controls. **Penn Electric Switch Co., Goshen, Indiana.** In Canada: Penn Controls, Ltd., Toronto, Ont. *Export Division: 13 E. 40th St., New York 16, U. S. A.*

PENN

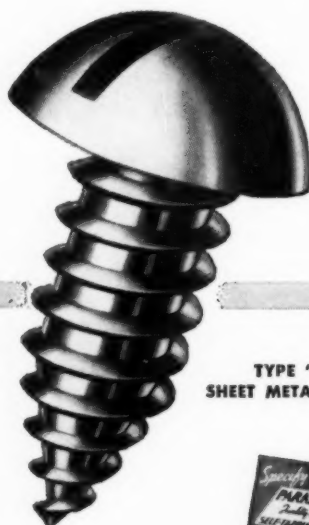


AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS



**"WE TRIED OTHERS BUT
ALWAYS CAME BACK TO P-K"**



**TYPE "A"
SHEET METAL SCREWS**

● There's a good reason so many sheet metal men feel this way about P-K Type "A" Sheet Metal Screws. For more than 30 years P-K's Type "A" has helped sheet metal contractors do better work and make bigger profits through faster, stronger assemblies. There's nothing like Type "A" for ducts, fan housings, exhaust systems—any sheet metal assembly up to 18 gauge.

And Type "A" is only one of a famous family of P-K fastening devices. It's plain common sense for you to take advantage of every "short-cut" they make possible by eliminating tapping, bolting, riveting, soldering.

Got a job using heavy sheets? Use Type "Z" or the heavy duty Hex Head Type "Z". Type "Z" is made in Stainless, too, if you make stainless equipment for restaurants, etc.

Got a job requiring fastenings to masonry? P-K Masonry nails are "made to order"—easier, quicker and cheaper than other methods.

Got a siding job? Use P-K Screwnails. They drive easily as nails — hold like screws.

Know the Complete Line of P-K Fastenings!

Write for Booklets Nos. 480 and 475A. Booklet No. 480 lists proper hole sizes for efficient driving and maximum security, and gives other helpful information. **SAMPLES**, too. Just tell us what you are fastening. Parker-Kalon Corporation, 200 Varick St., New York 14.



**TYPE
"A"**



**TYPE
"Z"**



**HEX HEAD
TYPE "Z"**

P-K



**TYPE
"F"**



**TYPE
"U"**



**MASONRY
NAIL**

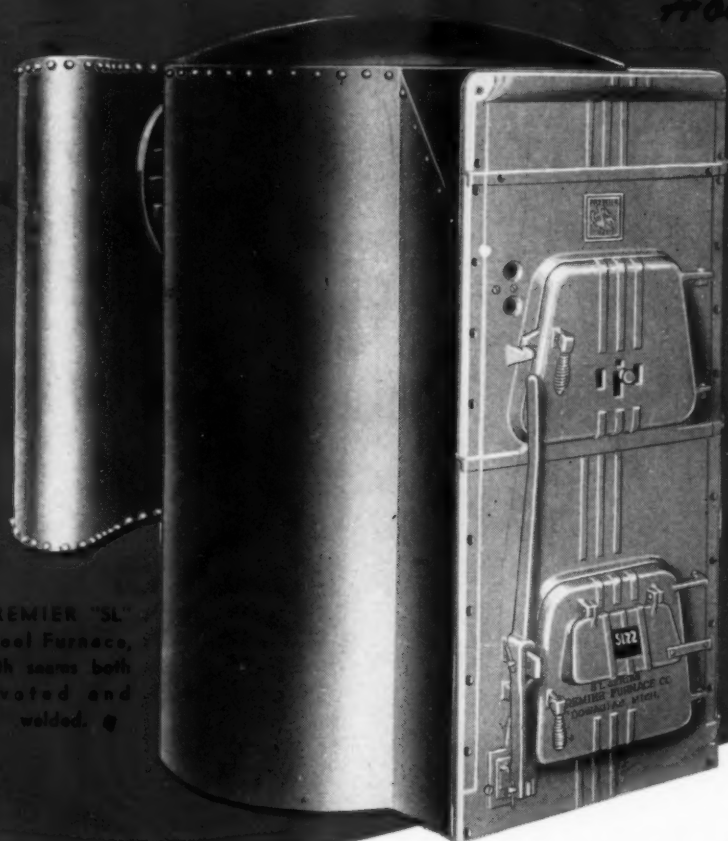


**SCREW
NAIL**

PARKER-KALON

SELF-TAPPING SCREWS

A FASTENING FOR EVERY METAL AND PLASTIC ASSEMBLY



PREMIER "SL"
Steel Furnace,
with seams both
riveted and
welded. ®

How This Furnace Grows Into An Air Conditioner



Sale No. 1

The high quality, hand
fired "SL" Steel Furnace,
at a moderate price.

Sale No. 2

Add on PREMIER
Blower-Filter Unit.



Sale No. 3

Add on PREMIER
Stoker, Oil Burner,
or Gas Conversion
Unit.

The Furnace that Creates Future Sales of Automatic Heating and Air Conditioning

Farsighted PREMIER Dealers know that one of the best ways of building profitable **future** business is by selling this great "SL" Steel Furnace to today's buyers.

This PREMIER "SL" Furnace is a great stimulus to future sales of "add-on" equipment, because it is the ideal basic unit for an eventual automatic winter air conditioner!

The "SL" is as efficient for stoker firing as for

hand firing. It gives out with the quick heat so desirable in oil or gas firing. And — you can add on a blower with no danger of fumes or smoke being drawn into the circulating air, because the seams in this furnace are both riveted and welded, permanently gas-tight.

Yes, today's buyers of the "SL" Furnace are going to be good customers for add-on equipment tomorrow, and PREMIER dealers will have a full line of PREMIER equipment for them.

PREMIER FURNACE CO.
Dowagiac, Michigan

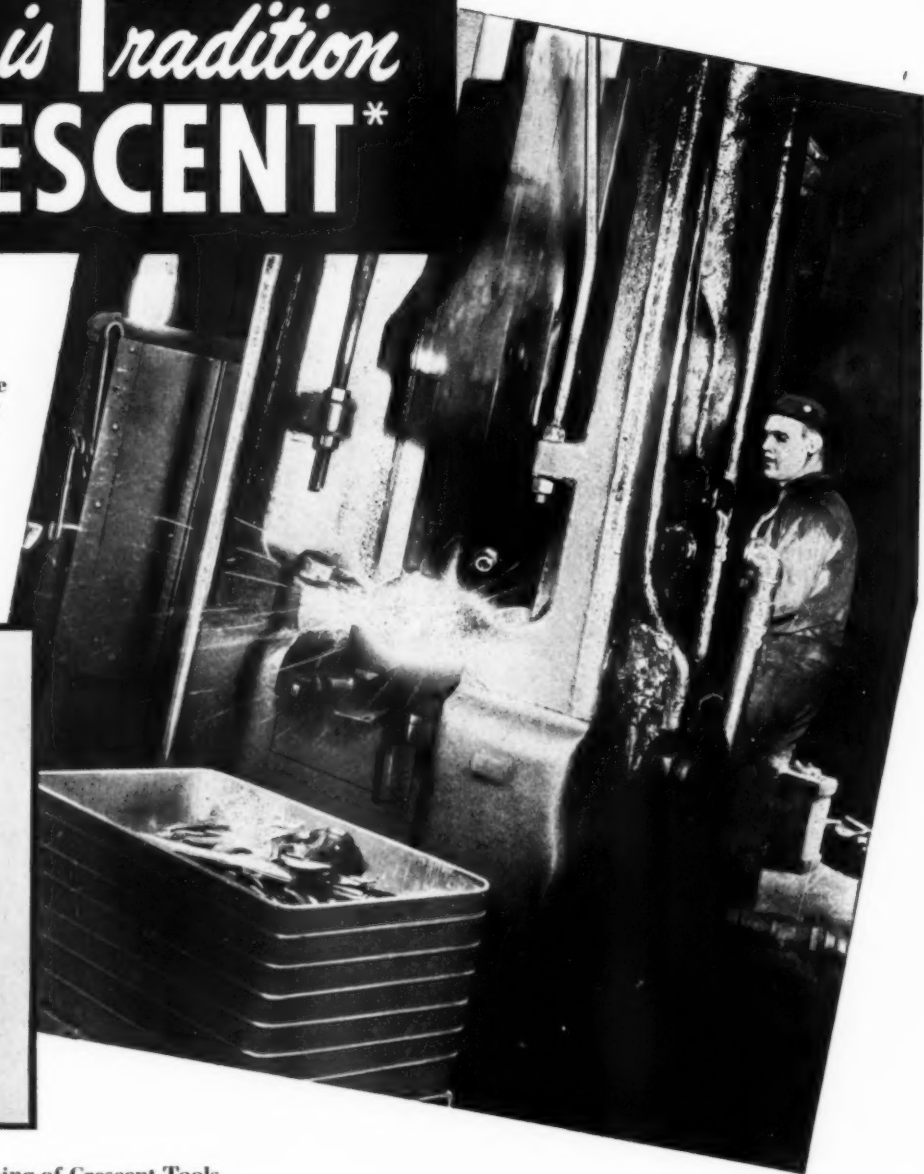
PREMIER

The Year 'Round Line



Quality is Tradition at CRESCENT*

First stage of manufacture takes place in the forging department. Here an operator is shown forging Crescent Snips.



Forgings, such as this, are the beginning of Crescent Tools.

● It takes a lot of experience and "know-how" to maintain product leadership in the face of keen competition. Crescent Tools, made by men who specialize in quality, are famous for their durability and performance. Maintenance of such distinction is a matter of pride to Crescent workers.

In the forging department, operators of the drop-hammers make certain that the first step of manufacture fulfills the Crescent tradition. Experience

has tutored these men in the technique so necessary for quality production. Steel must be at exactly the right heat for perfection in forging. If it is too hot ... or not hot enough ... imperfections result.

Before subsequent manufacturing processes are performed, the forgings are subjected to annealing, a heat-treating method which removes any trace of brittleness. This permits accurate machining and facilitates assembly and finishing of the tools.



* "CRESCENT" is our trade mark registered in the United States and foreign countries for wrenches and other tools. "Crescent" tools are made only by Crescent Tool Company of Jamestown, N. Y., and are sold by leading distributors everywhere.

Whether the shortage in your community is gas or oil — here is your answer to present restrictions. The Mueller Climatrol 201 Convertible Furnace is engineered for equal efficiency with OIL or GAS — converts to either fuel later, at a moderate cost. ➡

The Mueller Climatrol 201 Convertible Furnace

*solves your problem
of temporary
fuel restrictions*



If it's a gas shortage in your community, you can sell an oil furnace to people who want gas and can't get it — converting with a gas burner when the shortage is over. If it's a fuel-oil shortage, reverse the process. The complete, versatile Mueller Climatrol line brings the Mueller dealer out on top again!

With the Convertible 201, your customer

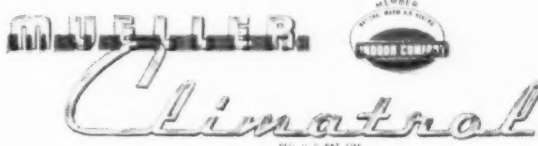
will be getting automatic heat *all the time* ... with the efficiency of an oil-designed job when he burns oil — and the efficiency of an AGA-listed gas-designed job when he burns gas for home-heating.

It's easy to see why the Mueller Climatrol dealer is always on top. Sell the line that does the most for your customers and for you—install Mueller Climatrol on every new home and replacement job you handle.

Write for bulletins.

L. J. Mueller Furnace Company

2010 W. Oklahoma Avenue • Milwaukee 7, Wisconsin



The Mueller Climatrol 202 Winter Air Conditioner consists of the 201 Convertible Furnace shown above, plus a blower package. The blower is a reversible unit and can be arranged on either the right- or left-hand side.

This steel

has a way

with paint



- ARMCO Galvanized PAINTGRIP Steel has a full-weight zinc coating. Unlike ordinary galvanized steel, it's friendly to paint. It does not dry out the vital oils, causing paint to flake and peel off before its time.

- The zinc coating on PAINTGRIP is Bonderized at the Armco mills. This neutral film provides a smooth surface that takes and holds paint. Weather-exposure tests show that paint lasts several times longer on ARMCO Galvanized PAINTGRIP than on ordinary galvanized or uncoated steels. And it actually costs less to use PAINTGRIP for gutters

and downspouts, air-ducts, and other building construction than it does to use ordinary galvanized steel and acid-etch before painting.

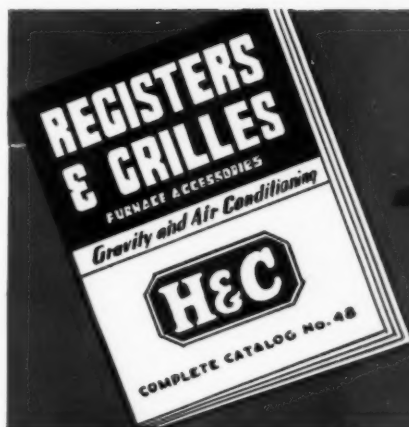
- Your Armco distributor may have more orders for PAINTGRIP than he can fill immediately. But he—and we—are trying hard to supply you with more of this special-purpose steel. We know how important it is for you to have sheet metal work that looks better longer and satisfies customers. The American Rolling Mill Company, 11071 Curtis Street, Middletown, Ohio. Export: The Armco International Corporation.

THE AMERICAN ROLLING MILL COMPANY

- SPECIAL-PURPOSE SHEET STEELS

- STAINLESS STEEL SHEETS, STRIP, BARS AND WIRE

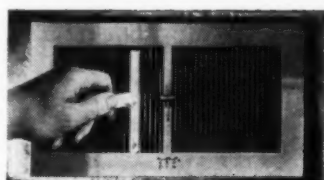




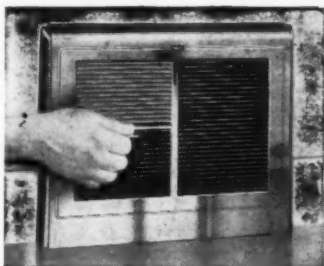
1948 GUIDE

TO THE BEST

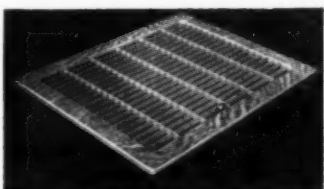
REGISTER and GRILLE



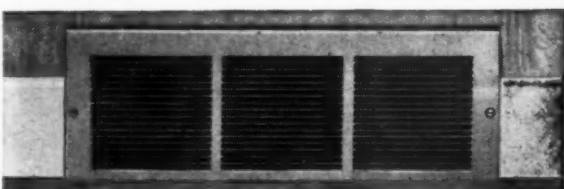
No. 75 — For Air Conditioning at its best. The only register with the incomparable TURNING BLADE VALVE.



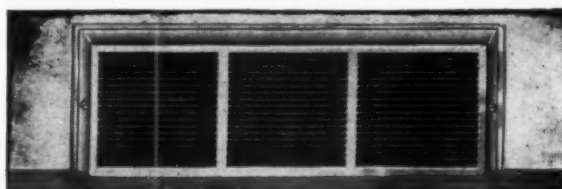
No. 130 Baseboard Register—the finest in gravity baseboard registers — excellent for conversion jobs.



No. 210 "NO-FLEX" Floor Register — Sturdy and Rigid — all that the name indicates. Heel-proof mesh.



No. 623 Return Air Intake — Flexible Fin type for installation where baseboard is lower than intake.

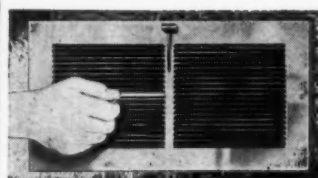


No. 653 Return Air Intake — Flexible Fin type for installation where baseboard is higher than intake.

for every type of installation

Continuing nearly a half century of leadership in the register industry, H&C will present in its new No. 48 Catalog, soon to be off the press, a line which welcomes comparison with any on the market. It's a well rounded line, providing the ideal register or grille for every type of installation—built, as you have come to expect from H&C, to the highest standards of efficiency and construction known to the industry, yet costing not one cent more than comparable items. An installer solves his register problems to best advantage once and for all time when he becomes a regular H&C user. And to that end the unmatched facilities for research, design and production of the world's largest register manufacturers are constantly devoted.

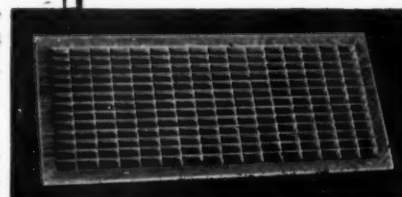
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No. 74—A low cost, but high quality A.C. Register with which you can meet competition without sacrificing customer good will.



No. 330 — Companion to the No. 130 — for sidewall installation.



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**Why limit your furnace sales to only one fuel when
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There's no evidence that the oil and gas shortages are temporary. The situation may not be corrected for several years. Coal offers the only assurance of fully meeting the home heating needs of the nation this winter and the winters to follow.

There are three complete lines of Williamson furnaces that will burn coal, gas or oil, efficiently. For those who wish to continue the use of coal, the TRIPL-IFE, the STANDARD Cast-Iron and the STEEL Furnaces meet these requirements.

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For those who wish to burn oil, WILLIAMSON Furnaces are readily convertible to a high efficiency oil-burning unit. This efficiency is as high, and in some cases higher than that of many units designed for burning oil only.

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FROM GAS TO COAL OR FROM COAL TO GAS, QUICKLY!

For those who wish to burn gas, the WILLIAMSON Cast-Iron Units can be converted to high efficiency gas units and reconverted to the use of coal—quickly and at little expense.

EARLY INSTALLATIONS ADVISABLE

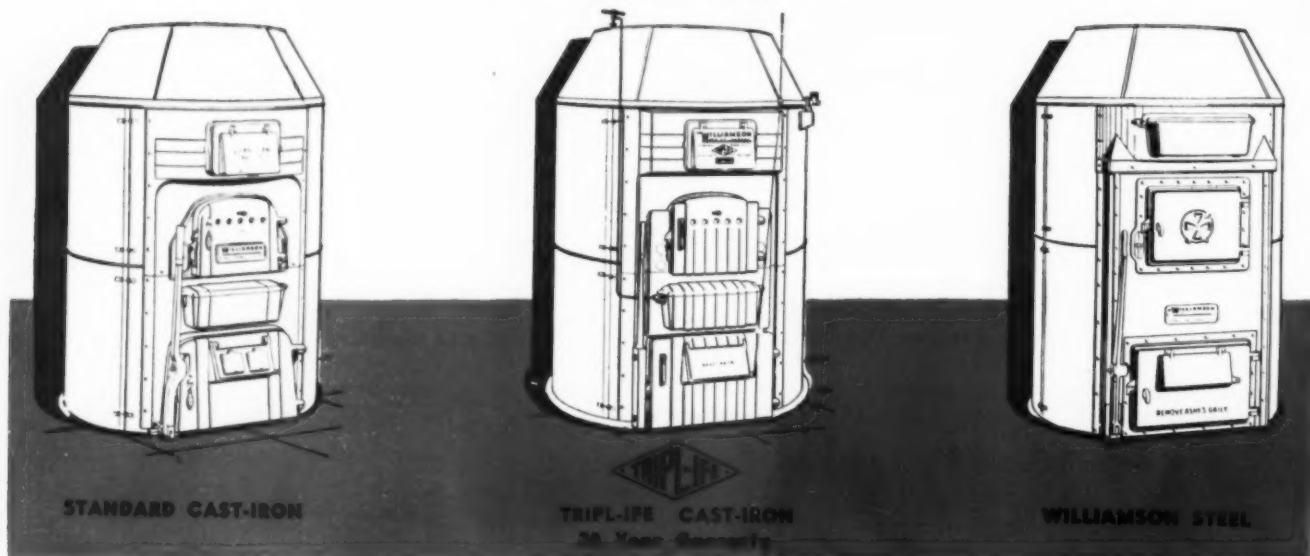
You can best serve your customers by recommending the early installation of WILLIAMSON "ALL-FUEL" Furnaces.

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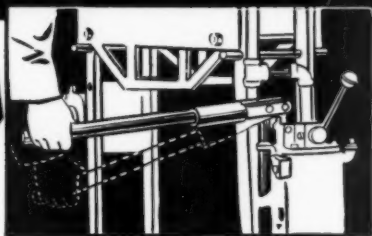
WILLIAMSON

WARM AIR FURNACES

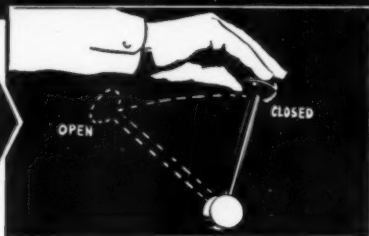
THE WILLIAMSON HEATER COMPANY
Cincinnati 9, Ohio



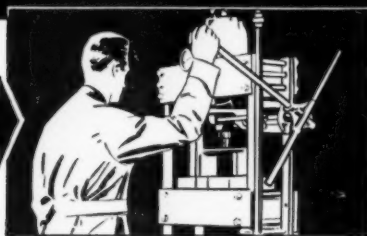
These **KRW** Hydraulic Arbor Press Features...



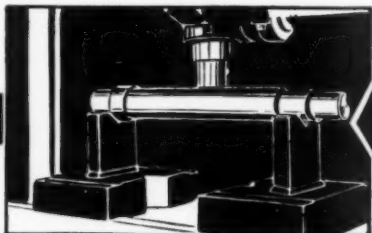
Fast Action, cylinder is filled as ram travels to work. You get tons of pressure with first pump stroke.



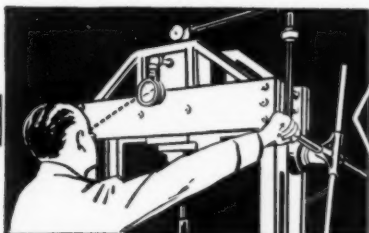
Finger Tip Control opens and closes valve in a jiffy. No gripping effort assures easier, faster operation.



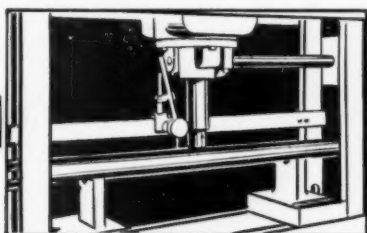
KRW Built-in Mechanical Press permits up to 3 tons pressure for straightening small diameter work.



One Piece, All Steel V-Blocks have machined surfaces for greater accuracy; usable upright or inverted.

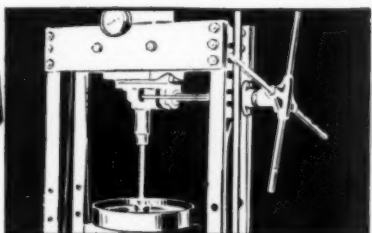


Highly Visible Pressure Gauges are mounted where they can be quickly checked. Read in tons and pounds.

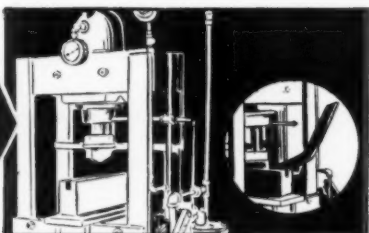


Micrometer Dial Attachment permits great accuracy in checking work without removing from V-block.

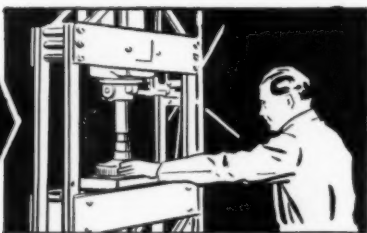
Reduce Costs ON THESE AND OTHER DAILY Production Jobs...



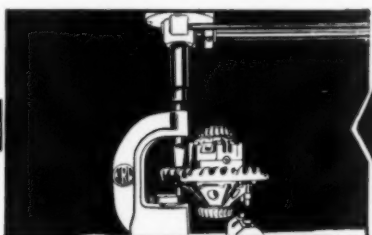
Broaching a key way in a flywheel. 7½ inch ram travel makes many broaching jobs practical on KRW Presses.



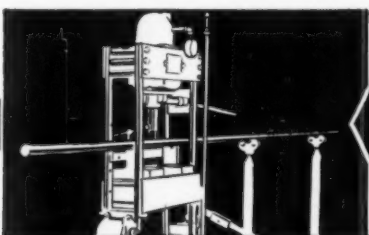
Bending in production lots with simple, inexpensive dies is easily done on low-cost KRW Hand-operated Presses.



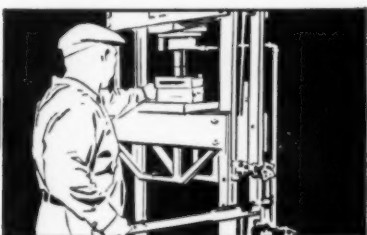
Pressing of all types is efficiently handled. Adjustable bed makes pressing on long shafts a very simple operation.



Riveting with KRW Riveting Attachment is simplicity itself. Many KRW Presses are used for this type work.



Straightening, especially on long work, is easy on a KRW Press because of its special open-end construction.



Blanking is easy with simple die set for short-run operations. Releases regular equipment for quantity production.

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take it **OUT** in a *Jiffy*

THE COMPLETE BURNER FROM

any **MONCRIEF**

Vaporizing pot type oil fired unit



You disconnect fuel line—remove a few sheet metal screws, remove a single panel, loosen two thumb screws—and lift out the burner—all in "a jiffy."

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Oil Fired, Steel Utility
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Series VL
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Check these outstanding features—features that make the Moncrief line "tops" in vaporizing, pot-type oil fired equipment . . . the burner with high and low flame baffles, assuring smokeless combustion—long-lived stainless steel flame deflector, saves oil, increases efficiency—heat absorbing radiation shield that does away with noisy inner liners—rugged, steel heating element and a cabinet that needs no basement platform or grouting.

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ARE FOREMOST BECAUSE THEY
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For controlling natural, manufactured and liquefied petroleum gases to gas-fired boilers, wall and floor furnaces, conversion burners and warm air furnaces. The T-30 gas heating set includes silent K-3B two-wire gas valve, T-70 two-wire Metrotherm, and 115-24 volt transformer.



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*they're
Copper Bearing*

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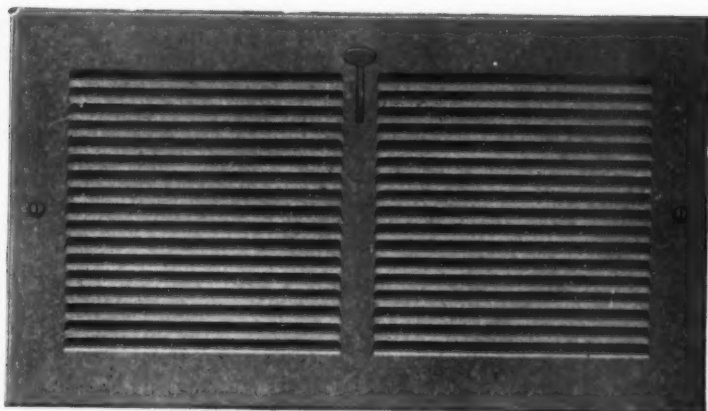
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Address

City State

I am interested (check) Heating ☐

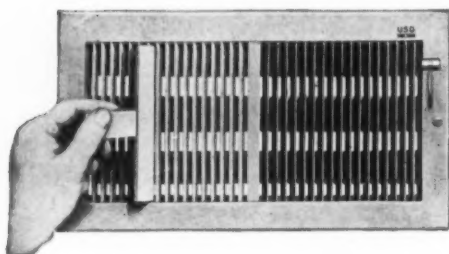
Cooling ☐ Refrigeration ☐



Adjustable for 2-Way Direction **AIRO-FLEX** Registers



Airo-Flex is also made in the "4000" Series with vertical bar grille and multiple louvre. Method of adjustment of grille bars shown below. This gives 4-way control.



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Auer offers a complete line of modern and attractive floor, base, and wall registers and return faces, for gravity or air conditioning systems—including all air directional types. We also make flat metal grilles for ventilation, concealment, or other purposes.

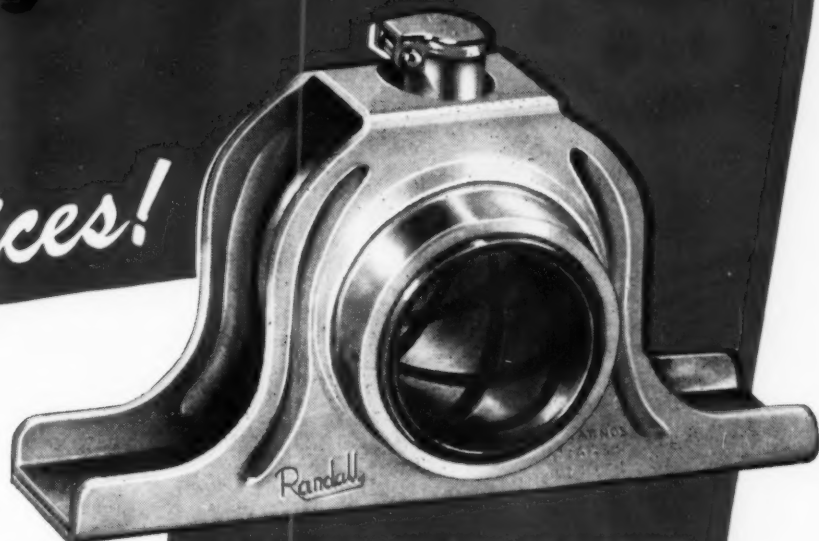
Ask for Auer Register Book
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The 248 is virtually identical with the famous one-piece steel housing pillow block—the highest production model in the entire Randall line. Check the features on the right—compare them with any other make. And, for the complete story, write Randall now!

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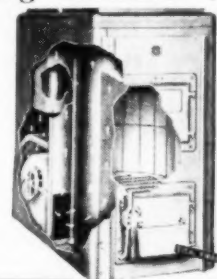
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Completely enclosed in attractive enameled casing are combustion chamber, heat saver, blower, motor, filter, humidifier, controls and burner. An ideal winter Air Conditioning Unit for home or building installation.

PERMAWELD CONSTRUCTION, applied to all Certified furnaces means an all steel body, electric arc-welded into one complete and durable unit. Through Perma weld construction gas leakage is overcome and installations made simpler.



WATCH OUR ADS FOR ANNOUNCEMENT OF NEW UNIT COMING SOON!



R-G GRAVITY FURNACE

Certified's all steel round gravity type furnaces are now available for immediate shipment. This popular model is built in sizes from 22 in. to 36 in. For full details on this R-G model, write for Bulletin 1144-C.

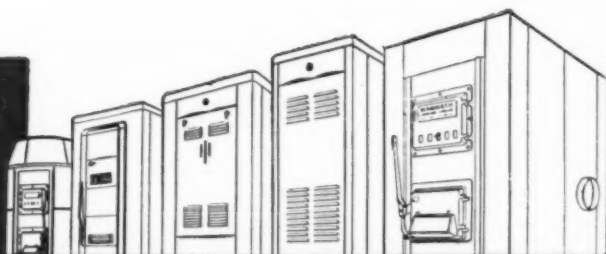
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Thermo-Drip Humidifiers moisten the air as it is heated—in direct proportion to temperature. Thermo-Drip Humidifiers positively regulate water feed and accurately control the amount of evaporation so that the minutely correct percentage of moisture is added to the air at all times. Thermo-Drip equipped furnaces give your customers the kind of health protection that doctors approve.

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THERE'S A THERMO-DRIP HUMIDIFIER FOR EVERY TYPE OR MAKE OF WARM AIR FURNACE

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HEAT REGULATED
HUMIDIFIERS

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Automatic HUMIDIFIER CO.
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The Department Store Idea

When you think of a Ryerson Plant, picture a huge department store featuring thousands of kinds, shapes and sizes of steel—sheets and bars, carbon and stainless, and many others. In place of the ordinary sales personnel, think of a large staff of experienced steel men—a sales department that's been carefully trained to guide your steel purchasing—to see that you get the best available steel for the job at hand.

And, when you think of Ryerson Steel-Service, think of a smooth-flowing system of steel supply that eliminates every unnecessary delay between order desk and point of delivery. Think of the most modern steel storing, cutting and shipping methods—methods based on more than a century of performance. And remember that Ryerson Steel-Service functions with the same efficiency and prompt-

ness whether your order calls for pounds or tons.

Naturally, today's great demand for steel frequently unbalances our stocks. But if the steel you need is not immediately available, we do everything possible to supply you with a practical alternate. And kinds and sizes out of stock today may be on hand next time you call.

What does it all add up to? Well, just about the last word in steel-buying convenience. And it's all yours when you contact a Ryerson Plant for any steel requirement.

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RYERSON STEEL

AMERICAN ARTISAN

RESIDENTIAL
AIR CONDITIONING
WARM AIR HEATING
SHEET METAL CONTRACTING

A New Secretary—A New Editor

AFTER seventeen years as editor of AMERICAN ARTISAN, J. D. Wilder leaves on September 1 to become executive secretary of the Sheet Metal Contractors National Association. We at AMERICAN ARTISAN congratulate the Association. It is getting an outstanding man.

Joe Wilder, as editor of AMERICAN ARTISAN, has been in a unique position to serve the warm air heating and sheet metal industry, to know its problems, its potentials, its people. His work has taken him to all parts of the country, put him in contact with all segments of the industry. It has been his job—and he has done it outstandingly well—to learn all about this field and to study the effects of technical, economic and political developments on it. It has been his job—also done outstandingly well—to interpret and report to his readers the significant information they need to guide their individual business operations. Under his editorship and under Keeney Publishing Company management, AMERICAN ARTISAN has taken a leading position in the publishing world. We salute Joe's part in this.

It was in his capacity as editor and in his line of work that he took a part several years ago in the development of a new contractors' association. As editor, he gave liberally of his time and knowledge, as well as the facilities of AMERICAN ARTISAN to help launch and to help build the Sheet Metal Contractors National Association. He developed a keen interest in it, was able to see its possibilities and its needs. In turn, its officers could see how important to the continued growth and service of the Association would be a man of Mr. Wilder's experience and capabilities. This combination of abilities and needs led to the position he now assumes.

Again we congratulate the Association. We wish Joe Wilder all the best. Though we are losing him as a fellow-worker, we are keeping him as a friend.

The facilities and support of AMERICAN ARTISAN provided in the past through Mr. Wilder are and will continue to be at the call of the Association, just as they are to any and all groups, any and all movements, that are working for the advancement and the good of the industry we have served since 1880.

A capable and experienced staff carries on for AMERICAN ARTISAN and, of course, over-all management is not changed in any way. To replace Mr. Wilder, John E. Peterson takes over the reins as editor. With twenty years of background as a contractor in this field, a researcher in product and market trends and a writer of articles on technical and management subjects, Mr. Peterson brings to the job a knowledge and a viewpoint that assure the continuation and further development of a helpful and progressive reader service.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Arnold Kruckman's Washington Letter

★ ★ ★ ★ ★ ★ ★ ★ ★ ★



Our Future Steel Needs

RESPONSIBLE Government sources estimate that the Marshall Plan may require 8,000,000 to 10,000,000 tons of steel next year for Western Europe's rehabilitation. Private agencies which question this estimate agree, however, that the Europeans will need at least approximately 5,000,000 tons, and that somewhere between 3,000,000 and 5,000,000 tons will be exported to Latin America and other areas which do not produce steel and which depend upon our mills for their supply. In these columns it has previously been stated that the steel industry expects to ship approximately 15,000,000 tons out of the country in 1948. The foregoing figures therefore patently confirm the earlier estimate. They reveal why the members of the subcommittee for steel in the Senate Small Business Committee informally predict that this export program will mean that thousands of small steel products manufacturing and fabricating concerns must go out of business for the simple reason that there will not be enough steel to take care of the smaller units of the American economy and the rebuilding of Europe. Whether it is sound logic to destroy a part of the American economy in order to restore shattered Europe, in the opinion of the members of Congress, is a question that must be answered by the public opinion of the people of the United States. The nation's legislators agree it is possible to enact some laws which may restrict the export operations, but short of drastic and stringent controls, such as are usually only practicable under war conditions, the legislators have little faith themselves in the casual lawmaking that would apply to this situation. Off the record, they urge that the only force which would exert the needed compulsion is an aroused public opinion. And this force obviously would have to flow from the members of that section of the economy who are in danger of being extinguished.

Work of the Subcommittee

The subcommittee for steel in the Senate Small Business Committee is guided by Senator Ed Martin of

Pennsylvania, a former Governor of that State and a former Major General of the U. S. Army. Martin, who himself is by way of being a more or less big business man as an oil operator, is one of the most objective and patriotic members of the Congress. Observers in the Capital become case-hardened and cynical because they hear so much vocal patriotism and see much more individual greed and selfishness. Martin is one of the fewer persons in the Congress who apparently thinks nationally and aspires collectively. He is not spectacular, but makes a deep impression upon those who get to know him. There is an increasing tendency in some sober quarters to urge that Martin be studied as a potential dark horse in this wilderness of Republican Presidential candidates who do not quite click. It was Martin, not long ago, who pointed out that one of the dangers of that huge export program for Europe is that much of the steel may inevitably find its way to Russia.

Invariably the supplies we have sent to Western as well as to Eastern, Southern and Northern Europe have largely gravitated to Russians. Martin also has found, by investigation, that Russia is presently working feverishly to build up her steel industry and that she has been rearing this new structure on the absolutely modern steel production equipment we gave her during the war. Senator Martin holds that the Russians have acquired a large part of our know-how, and that when the war potentials are eliminated she may become one of our principal (if not the principal) competitors in supplying steel and steel products to Latin America and other areas which should be our markets.

Response to Questionnaire

George Meredith, the director of the subcommittee for steel, Senate Small Business Committee, still finds that the smaller units which use steel are the most timid about supplying facts for study and investigation. The questionnaire sent out by the committee has elicited sparse data, but the statisticians have reached

the conclusion, based on the facts supplied, that somewhat over 20 per cent of the steel purchased the past year has come from the grey market. Apparently the investigators have been able to get track of 2,000,000 tons of steel that has come from grey market sources. Grey market steel comes into the market by various routes, but there seems little doubt in the minds of the Government people that some mills tacitly cooperate with the grey market purveyors. Who gets what and how the divvy may be organized is not clear. One of the grey market sources most frequently encountered is the user who has a reasonably liberal allocation. He often does not have use for the total quantity of his allocation. Yet he continues to take and receive the whole amount of his original allocation. The surplus he cannot use is the steel that finds its way into the grey market at a considerably increased price.

Not long ago in a western city where a warm air furnace manufacturer was desperately in need of steel, a steel consumer with apparently a large surplus advertised 70,000 tons, which he offered to deliver at the rate of 7,000 tons per month for ten months, either the whole 7,000 or integral parts thereof. The people who make the investigation for the Government remark that a situation like this puzzles them because it is obvious in the steel business, as well as in other firm business, the salesman for the supplier is invariably well informed about the needs of his customer. He knows if his credit has been impaired and he knows when he consistently over-buys or over-orders. The investigators naturally wonder why the steel sellers are hoodwinked into overselling those who supply the surplus to the grey market. Government also is certain that considerable grey market steel comes out of warehouses, especially where the relations are close between the operator and the customer. There appears to be very sound reason for the suspicion that a great quantity of the steel, which is supposed to go out of the country in export, actually goes to the domestic grey market. The assumption is permitted that much of this grey market steel actually may pass over one border or another, but swiftly re-enters the country with a minimum of customs charges. The Government has found direct evidence that some mills actually supply the grey market. There is the case in the instance of one mill which purchased two smaller units, closed them down, and sold their products in the grey market.

Items Most Scarce

The investigations confirm that sheet metal and tubular steel is most scarce. There are enormous backlogs of demand for galvanized sheets. Galvanized sheet production is reported to be running at less than 60 percent of available capacity for production. The shortage is attributed to continued shortage of hot rolled steel. Finishing capacity is apparently organized on the basis of urgency of demand. Government has been told that it is very questionable whether the estimated sheet and strip output totalling 19,500,000 tons for 1948 and 20,600,000 tons for 1949 will come anywhere near the demand; the current production is reported at the rate of 17,800,000 tons per year, which

is said to be equal to 30 percent of all steel being shipped, and an increase of 25.4 percent over the 1946 production. Before the advance of coal miners' wages, sheet steel is reported to have sold in commodity grades at \$7 to \$10 less than they sold in 1940 and 1941. The increase in coal prices is reported to have hoisted the cost of steel production \$2 per ton. With the recent increase in steel prices at \$5 per ton, at this writing it has not appeared how far the selling prices of sheet and strip have advanced. In discussing the higher prices the leaders in the steel industry suggested the increases could be passed on to the ultimate consumer at the rate of 50c per unit in sale of refrigerators to \$10 for each automobile. Government observers report that the imminent resumption of production at Sparrows Point, Maryland, will probably place more sheet and strip on the market.

Senator Martin has pointed out that freight car production has dropped to 3,500 per month despite the promise of the producers to supply the steel that would enable the builders to turn out 7,000 cars per month in Summer and bring the output up to 10,000 per month in Fall. Senator Reed called a conference of the builders and steel producers late in July to discover why they failed to keep their promises. They attributed the failure to the coal strike and similar disturbances. Senator Martin also has called a conference of the leaders of the steel industry, to take place early in August, to find out why they have not taken steps to increase production and why they have not augmented the delivery of all types of steel at home. It is likely they will be told that legislative action may be in the offing to force more production, more service, and more of everything that is needed by users of steel. Martin holds that practically all export of sheet, tubing, and steel pipe should be prohibited immediately.

President Has Needed Powers

He will tell the conference there is already legislation on the statute books which empowers the President to place an embargo on all foreign oil shipments and that similar legislation could be provided to prevent the shipment of sheet, tubes, and steel pipe. He has emphasized that several millions of tons of this type of steel products are at various ports awaiting shipment to Saudi-Arabia and other foreign oil fields and manufacturers, large and small, already are compelled to shut down their factories for lack of steel. He pointed out that the Senate Committee has found that sheet steel and tubular steel more than doubled in 1946 and 1947 over prewar exports and that more than 65,000 tons of steel was shipped openly to Russia in 1946. The committee investigation revealed that under the so-called Hyde Park agreement between President Roosevelt and Canadian Prime Minister King there are absolutely no controls over the export of any materials, including steel, to Canada. The implication was clear. Martin showed that in 1938 we shipped 409,279 tons of steel to Canada, while in 1946 876,135 tons went into Canada, and during the first months of 1947 nonfabricated steel products went into Canada at the rate of better than a million tons per

(Continued on page 148)

Shop Problems in Mathematics (Part II)

By J. P. Harner

This is the second article by Mr. Harner on this subject that is of considerable importance in the everyday operation of a shop. He has covered most of the basic mathematical processes in a thorough manner since he is a practically minded man.

DIVISION of whole numbers by fractions: Occasionally a problem of this nature comes up in the shop, it is found necessary to cut some 30 inch sheets into $\frac{3}{4}$ inch strips, how many strips will a sheet make?

Rule: To divide a whole number by a fraction, invert the fraction and multiply.

Example:

$$\frac{30 \times 4}{3} = \frac{120}{3} = 40 \text{ strips}$$

Or perhaps this splitting problem may present itself, a number of 28 inch sheets are to be split into $2 \frac{15}{16}$ inch strips, how many strips will a sheet make and what is the width of the waste? Reduce the divisor and dividend to 16ths.

28 inches = 448 sixteenths, $2 \frac{15}{16} = 47$ sixteenths, $47 \div 448 = 9.25/16$ or 9 strips with $1 \frac{9}{16}$ inch waste.

Conversion to Decimals

As we are now dealing with fractional parts of an inch, it may be found necessary to convert these to a decimal fraction.

Rule: To convert the fraction to a decimal, the smaller number is divided by the larger, the product being a decimal fraction.

Take the common fraction $1/16$ we were using above.

$$1 \div 16 = .0625 \text{ or } \frac{1}{8} = 1 \div 8 = .125$$

This shows that the common fraction is equivalent to a decimal fraction. Any other fractional part of an inch is developed in the same manner. $7/16 = 7 \div 16 = .4375$; $2 \frac{1}{64} = 21 \div 64 = .3281$; $3/32 = 3 \div 32 = .0937$. This is the basis of the chart showing fractional parts of an inch with their decimal equivalents.

Area of Circles

A few comments here on the area of circles may be appropriate, the circumference charts always include the areas of the circles whose circumference is shown. The reader should be able to determine the area without the chart when occasion arises.

The arithmetical rule: Diameter squared $\times .7854$.

The algebraic symbol: $A = D^2 \times \frac{\pi}{4}$ definition, Area

= diameter squared times $\frac{1}{4}$ of 3.1416 or .7854.

Diameters are measured with the foot rule in feet, inches and fractions; to simplify the calculations in squaring the diameter, reduce the feet to inches, and the fractions to decimals.

Example: diameter of a tank is found to be 2 ft. $3\frac{3}{8}$ inches. 2 feet = 24 in. + 3 = 27 inches. $\frac{3}{8}$ in. = $3 \div 8 = .375$ or 27.375 inches. A second pipe may be $9 \frac{9}{16}$ inches in diameter $9/16 = 9 \div 16 = .5625$ or 9.5625 inches in diameter.

To find the area of the tank. $27.375 \times 27.375 = 749.390625$.

$749.390625 \times .7854 = 588.571$ square inches is the area.

Area of pipe. 9.5625 or for all practical purposes, $9.56 \times 9.56 = 91.3936 \times .7854 = 71.78$ square inches.

A few circumference charts give the area in square feet, thus, 2 inches diameter = .0218 sq. ft., 3 inch diameter = .0491 sq. ft., 17 inches in diameter = 1.576 sq. feet.

To reduce the decimal ft. to square inches, multiply the decimal by 144. (144 sq. in. 1 sq. ft.)

Example: $.0218 \times 144 = 3.1392$ or 3.14 sq. in.

$$.0491 \times 144 = 6.07 \text{ sq. in.}$$

$$1.576 = .576 \times 144 = 82.94 \text{ sq. in. } 144 + 82.94 = 226.94 \text{ sq. in.}$$

The following problems are of frequent occurrence.

To connect a round pipe to a square opening or duct of similar area. *Rule: Multiply one side of the square opening or duct by 1.128.*

Example: Connect a round pipe to a 16x16 in. square opening, the round pipe to be equal in area to the square opening. $16 \times 1.128 = 18.048$ for the diameter of the round pipe, or 18 in. for all practical purposes.

Or perhaps the problem is reversed, connect an 18 inch round opening with a square duct of equal area.

Rule: Multiply the diameter by .8862.

Example: $18 \times .8862 = 15.9516$ inches in width for each side of the duct. For all practical purposes use 16 inches. To prove the above rule correct: $16 \times 16 = 256$ sq. inches.

18 inch round pipe, $(18 \times 18) \times .7854 = 254.64$ sq. inches in area for the round pipe.

The proper placing of the decimal point is the key in using decimal fractions, emphasis must also be placed on the readers ability to multiply correctly, always recheck the figures carefully. The usual procedure in the shop in determining a round pipe of equal area to a square opening is to find the area of the opening then check its equivalent on the circumference chart, understanding the above rules will permit one to calculate either of the problems quickly without the chart.

Figuring Percentage

The next problem will be "Percentage." This is encountered more than would be suspected, and is usually "guessed at."

Rule: To express a common fraction in percentage, add two ciphers to the numerator and divide by the denominator.

Example: There are 27 employees on the pay roll, 8 are employed on outside work, what is the percentage of men thus employed? 8 the numerator, 27 the denominator. $800 \div 27 = 29.6$ per cent of the men employed on outside work.

Example: A contract is estimated to require 8 working days of 8 hours each to complete. The men have worked 18 hours on the job, what percentage of the contract is complete? Theoretically 8 days equal 64 hours. $1800 \div 64 = 28.1$ per cent completed.

Example: Screw holes in a 1 inch strip of iron are $7/32$ inch in diameter, what percentage of the strip is removed in punching? $700 \div 32 = 21.28$ per cent or 22 per cent.

Quite often payments are made on a contract when it is 25 per cent, 50 per cent etc. completed.

Example: It is estimated the cost of materials on a job will be \$360.00. To date, \$82.00 worth of material has been delivered and used on the job, what percentage of material has been used? $8200 \div 360 = 22.8$ per cent. It was estimated \$475.00 in labor will be required, to date \$110.00 has been paid out for labor, what is the percentage? $11000 \div 475 = 23.18$ per cent completed.

Both examples may be stated thus, material used 22.8 per cent, labor 23.18 per cent.

Example: There are 328 members in a congregation, 300 were present at a banquet, what percentage of the membership were present? $30000 \div 328 = 91.1$ per cent.

Here is a different problem met with in the shop in which percentage is used. "Tensile Strength" is one of the physical properties of steel the sheet metal worker should consider. The tensile strength of mild steel, that in which the carbon content is either small or absent, such as strips cut from sheets is approximately 37,000 lbs. per square inch.

In using this figure a safety factor should be used. With a steady load a factor of 4 can be used, where a load varies from zero to maximum in one or both directions, a factor of 8 should be used. Where sudden shocks are encountered, a factor of 12 may be necessary.

If reference is made to a U. S. Standard gauge chart, the fractional thickness of various sheets are usually shown, for instance 20 gauge is shown as approximately $3/80$ ths of an inch thick.

A strip 1 inch wide will be taken as a basis for these calculations, then any other widths may be easily estimated. $1/80$ of 37000 = $462\frac{1}{2} \times 3 = 1397\frac{1}{2}$ or 1400 lbs. A strip of 20 gauge iron 1 inch wide will theoretically support a steady load of 1400 lbs. This applies providing the supporting strip is fastened in such a manner as to require no holes to weaken the metal, however, in practical applications holes must be made for screws, bolts or nails, etc.

Presume that hardened sheet metal screws are used, there are $3\frac{7}{32}$ inch holes in a vertical line on each end of the strap, this reduces the width of the strap $7/32$ in so far as its load carrying capacity is concerned. $7/32 = 700 \div 32 = 21.9$ per cent or 22 per cent. 22 per cent of 1400 = 1092 lbs. For a steady load a safety factor of 4 will be used, $4 \div 1092 = 273$ lbs. Or if the load was such that sudden shocks are encountered, a safety factor of 12 will be used. $12 \div 1092 = 91$ lbs.

While the last problem on "Tensile Strength" of steel may diverge from the subject under discussion somewhat, it is a subject that is usually given little thought since a strip of metal is often selected of about 10 times the required strength and applied without regard for the appearance of the job.

Those who learn the above rules, though few in number, will be able to calculate any problem coming up in sheet metal work.

More Mechanics Needed

THREE hundred thousand more skilled workers and foremen are needed for the construction trades than were employed last summer. This estimate has been forecast by Gino J. Simi, district director of apprenticeship.

Of all apprentices hired during April throughout the nation, 49 per cent were employed in the building trades, William F. Patterson, director, apprentice

training service, U. S. Department of Labor, reported recently. This proportion of apprentices in the construction industry is due to the need of skilled workers for the construction of new homes, and the heavy backlog of maintenance and repair work piling up during the war, said Mr. Patterson.

The urgent demand for building crafts of all types will expand rapidly now that federal limitations on non-residential types are removed.

Ten Commandments of Successful Salesmanship

By Arthur Roberts

Signs of a return to the Buyer's Market in construction and related industries are increasingly apparent and this article is another in an informal series calculated to assist in returning the quality of salesmanship to the pre-war level.

THIS postwar period opens new vistas to the dealer employing salesmen and to the salesmen employed by the dealer but the old fundamentals remain the same. In these hectic times, when so many of the old rules found by experience to be reasonable and sound, are being junked for the spectacular chatter of theorists, it behooves the dealer to review his own attitude toward salesmanship, and to inculcate in his salesmen these ten commandments of successful salesmanship, just as applicable today as they were in pre-war times.

1—With all thy getting, get confidence.

Confidence is the cornerstone of successful salesmanship, yet, the best salesmen lose heart occasionally when they experience too many turndowns or low-volume closings. A selling slump now and then is an occupational hazard of salesmanship. Its effect is detrimental, only when it kills confidence. To the wise salesman, it is a challenge to greater effort—and eventually the road to greater productivity, but some men need outside guidance along these lines. Dealers should keep watch for this psychological downbeat and attempt to straighten out their men when they hit a selling slump, particularly those working on the outside. Sometimes a heart-to-heart talk will revive lagging spirits, or possibly a dinner or a good show at the boss's expense will turn the trick. A good salesman is worth this small investment, because the sooner he gets back to normalcy, the more profit that will accrue to the dealer. Griping with a man because he is no longer hitting the jackpot, as is too often done, is poor sales management.

2—Know your stuff.

Manufacturers' literature offers many good points about the products sold and it is too often unread or scanned only slightly. Study this literature carefully so that you can "talk turkey" to your salesmen about it and see that they are equally well versed in the "know-how." In prewar years, too many salesmen knew

too little about the contents of advertising matter put out at great expense by the manufacturers, a goldmine of information, not only for the boss, but for salesmen and prospects too. Don't overlook an opportunity to get better acquainted with your wares. Knowledge is selling power.

3—Keep on the sunnyside.

A genial order-taker will sell more goods than a deadpan salesman with dynamite in his presentation. We don't mean the back-slapping wag or larky lad who shows his pearly choppers at the least provocation but the fellow who keeps his worries out of sight and always a blithe spirit to the fore. He imparts sunshine to an interview, not gloom, a type of personality that usually gets the business. Select salesmen that possess this precious characteristic and you'll have a good crew of order-gaffers.

4—Budget selling time.

Just as management must distribute its advertising outlay judiciously and where it will get the best results, the salesman must budget his labor hours. In the factory, a budget paces production and provides a yardstick against which to check results. In the field, a salesman must police his production in similar fashion to make sure that every day in every way he is getting better and better. This he achieves by comparing actual results against budgetary estimates from period to period. The dealer should encourage his outside salesmen to budget their selling time and issue report forms for them to detail the calls, prospects interviewed, call-backs, etc.

5—Know your competition.

The more the salesman knows about competing lines, the better he can talk his own. Knocking competition means "curtains" for a salesman's offerings but knowledge of competition enables a salesman to stress features in his products that are not so good in another.

The salesman who knows the weak spots and strong points of his competition can boost his own wares without hitting below the belt and run up a good record in combat. See that your salesmen know enough about what the other fellow is selling to sell their own.

6—Play down price.

In days of short supply, price is usually a secondary consideration, but sooner or later, a buyer's market will be with us again and that is the time too many salesmen have an overwhelming urge to tell a bargaining prospect, "I'll see if I can get a better price from the office." The salesman who feels that he is not giving value for the asking price had better get another job. He is a headache to the boss and seldom a profitable producer. One can't build prestige for a business or a line by giving prospects the impression that one is working for a two-price house. Impress upon your salesmen that they quote a price and stick to it, and that is good counsel for the dealer too. Soon the price-cutters will be back in the picture and they can run a seller ragged if he lets the impression get around that his prices are only make-believe.

7—Solicit live leads from buyers.

The buyer is often a mine of valuable information that may be transmuted into sales coinage if the salesman contacts him for live leads of friends, relatives, etc. The best way to get results with this type of lead is to card it systematically. Do not depend upon the salesmen for these recordings. While they are working for you, these leads are yours and they are valuable enough to card for follow-up in the office. Space on the salesman's report form is often allotted to the recording of such leads, which should be carded alphabetically. Some organizations give the source a gratuity if the lead is closed. Buyers are really a live source of leads, yet, comparatively few salesmen grapple for them. Instruct your salesmen to re-visit customers who have purchased equipment, supplies and other products in order to query for leads.

8—Don't encourage standardized sales talks.

All customers do not react the same way to the same sales treatment. The well-trained salesman studies customers in order to handle them in accordance with their particular characteristics. One customer will

take sales pressure without untoward effects, another reacts favorably to a bit of banter and general camaraderie, and so on. Before the war, some managements experimented with the canned sales talk but research has disclosed time and again that it does not get best results. It is a lazy man's sales talk and often a hard way to close a sale. Although it may help a new salesman to marshal his presentation with effectiveness at the start, once he has absorbed the "feel" of his proposition, sales experts say it is best to shed the armor and adjust the sales talk to suit the prospect.

9—Hold sales meetings regularly.

In the old days, sales directors were pep-happy, gave high-powered talks to salesmen but, in time, the veneer wore off and they did little good, often harm. Sound counsel anent the problems experienced by salesmen is always welcomed, also an inter-exchange of experiences in the field. The sales meeting is the best medium for such exploration. Commercial movies are helpful. In the prewar days, they showed how products were made and sold, and were of great assistance to salesmen in marketing the goods. Not only outside salesmen, but men behind the counter were helped in this way. The war put a stop to the production of commercial movies but they should be back in the groove eventually, and when available, the dealer should try to obtain them for his sales meetings. Inside and outside salesmen should attend these meetings. Each group has ideas and experiences that can help the other.

10—Watch the profit on salesman sales.

This may or may not apply to all goods sold but it is a fact that some lines sell more easily than others. Some salesmen take orders for the easy salables and do little about selling the hard-to-sell items. In many cases, the easy salables net the least profit so that a salesman may show a heavy sales volume but a low net profit. The dealer, obviously, should push lines that net him the most money and encourage salesmen to cooperate with him toward this objective.

With restrictions off, all lines will be coming to market in heavier volume, competition will become more keen and a buyer's market will rear its head. Salesmanship will then be back in the saddle again, so, now is the time to plan an aggressive selling program and the build-up of an efficient sales force.

Our Exports

ROLLED steel products exported in the first quarter of 1947 amounted to 10.6 per cent of U. S. production, while in 1939, 7.2 per cent of our production was exported. Further comparisons of interest to warm air heating and sheet metal contractors are as follows: tin plate and terne plate, 17.1 per cent against 13.6; plates and sheets, 7.7 per cent against 7.6. Freight cars exported in the 1947 period accounted for 53.5 per cent of the output of U. S. freight car manufacturers.

Some products, such as petroleum, did not share in the 1947 gains. For example, 3.9 per cent of our gas and fuel oil production was exported in the first

quarter compared with 9.7 per cent in 1939.

Dollar volume of scarce manufactured products shows impressive export gains, according to recent business reports. May 1947 exports of electrical apparatus and machinery totaled \$55.6 million against a monthly average of \$8.6 million in 1939; industrial machinery, \$145.3 million against \$24.3 million.

At a time when many of our scarce items are coming into good supply, fears for our high geared economy are being expressed if exports are curtailed. Unemployment and collapsing prices are cited as a possible consequence of restricting exports.

NEWS SUMMARY OF THE MONTH

Controls on Building

CONTROLS over building are now practically non-existent—veterans must still be given a purchase preference of 30-days; construction of recreational and entertainment structures is still prohibited unless approved; otherwise homes of all price brackets and all types may be built and industrial and commercial construction can go ahead without approval.

This release should result in an increase in construction—if certain problems can be solved. One such problem is high prices which have deterred buyers from buying or constructing houses even though the home was badly needed.

It is forecast that the release will stimulate construction of multi-apartment structures where mass building techniques can be used to reduce labor costs. Further, multi-unit structures are best suited to the production of a large number of housing units in the shortest possible time.

Cost of building materials has been a deterring factor. But production of practically all materials has been increasing rapidly and already some cuts in prices have been announced. Some reductions in prices have been made among the products our industry uses.

Gas Sales Rise Sharply

SALES by gas utilities to ultimate consumers in February totaled almost three billion therms, an increase of almost twelve per cent over February, 1946. For the twelve months ending February 28, 1947, gas sales totaled almost 26 billion therms, a gain of three per cent over the comparable period a year earlier.

American Gas Association has announced that the degree days in the manufactured gas area have been 8.3 per cent over a year ago; in natural gas areas, the degree days were 20.6 per cent higher; in mixed gas areas, there was an increase of 14.6 per cent in degree days as compared with February, 1946. This increase in degree days accounts, in part, for the increased load on gas utilities during the months of February and January.

Steel Scarcity

BEFORE the house small business subcommittee Walter P. Reuther, president of the CIO United Auto Workers, recently charged that the steel companies are resisting expansion of facilities thus contributing to a planned scarcity in order to secure profits and strengthen their monopoly.

He told the congressional committee that shortages of steel have caused lay-offs resulting in a loss of pro-

duction of 360,000 automobiles this year. He claimed that if present capacities are maintained at 80 million tons per year during the next 5 to 10 years, 2 million of the anticipated 7 million automobile production during this period will not be produced from lack of steel resulting in unemployment for some 200,000 auto workers.

Reuther appealed for governmental assistance if the steel industry should not see fit to increase facilities to cope with demand and disputed previous testimony before the committee by steel company officials that 56 million ton capacity will be sufficient to fulfill demand in 1950.

Meanwhile the heating and sheet metal contractor is faced with a stringent sheet steel situation until the current sheet and strip production of 19 million tons catches up with demand.

Fuel Oil Report

C. R. JONSWOLD, Chairman, Fuel Oil Supply Committee, Oil-Heat Institute of America, in a recent report has stated that there is no actual basic shortage of petroleum products and any spot shortages which occur will be entirely due to shortages in transportation facilities.

Conclusions and recommendations were based upon an estimate of approximately 530,000 new power driven oil burning installations during 1947 with replacements of existing equipment not included in that figure.

The Committee's information was that the Midwest would be more likely to suffer from spot shortages in burning oils in the distillate class during the next heating season than any other section of the country. OHI is conducting a national campaign to have all fuel oil storage tanks, both distributor and consumer, filled as quickly as possible and bulk storage filled on or before November 30th. A special search is being made for bulk storage facilities which may not have been used for burning oils before this time but can be adapted.

Warm Air Furnace Shipments

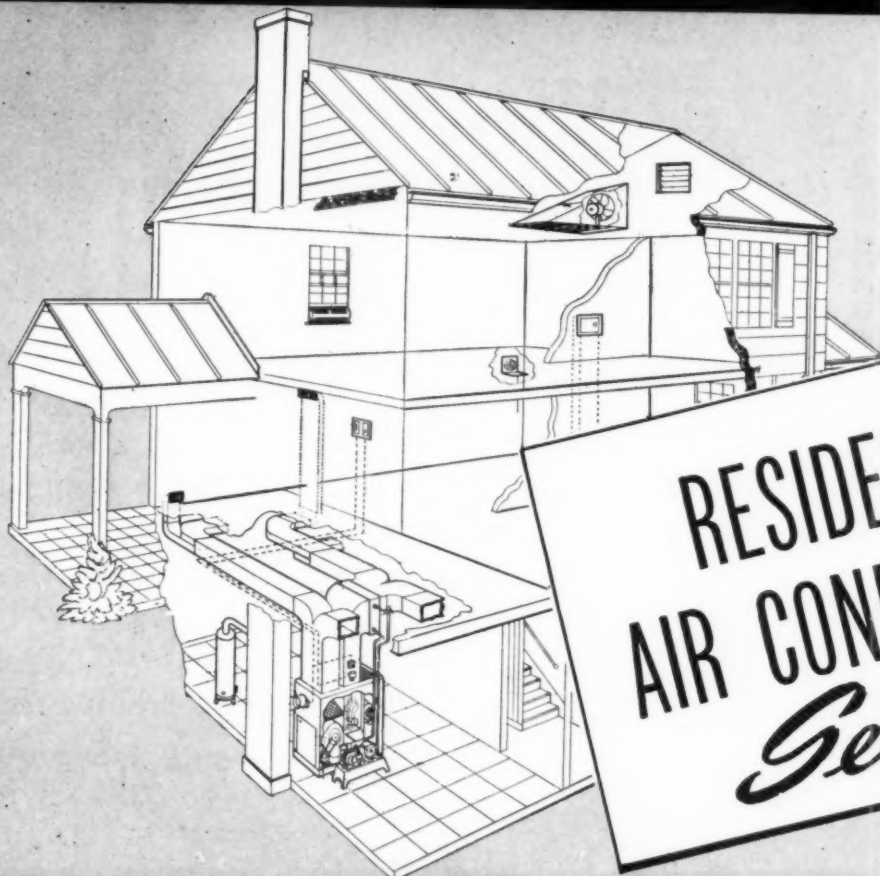
SHIPMENTS of warm air furnaces in May 1947, reported by the Department of Commerce, totaled 54,916 units. This represents little change from the 55,297 units shipped in April this year.

About 75 per cent of the May shipments were steel construction, and the remaining 25 per cent were cast iron.

Oil-fired furnaces accounted for 45 per cent; solid fuel, 37 per cent; and gas-fired, 18 per cent of the units shipped.

Solid fuel and oil-fired furnace shipments increased by 3,900 units over April, almost offsetting a drop of 4,281 gas-fired furnaces in May.

(Continued on page 142)



RESIDENTIAL AIR CONDITIONING *Section*

DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING



Waterbury

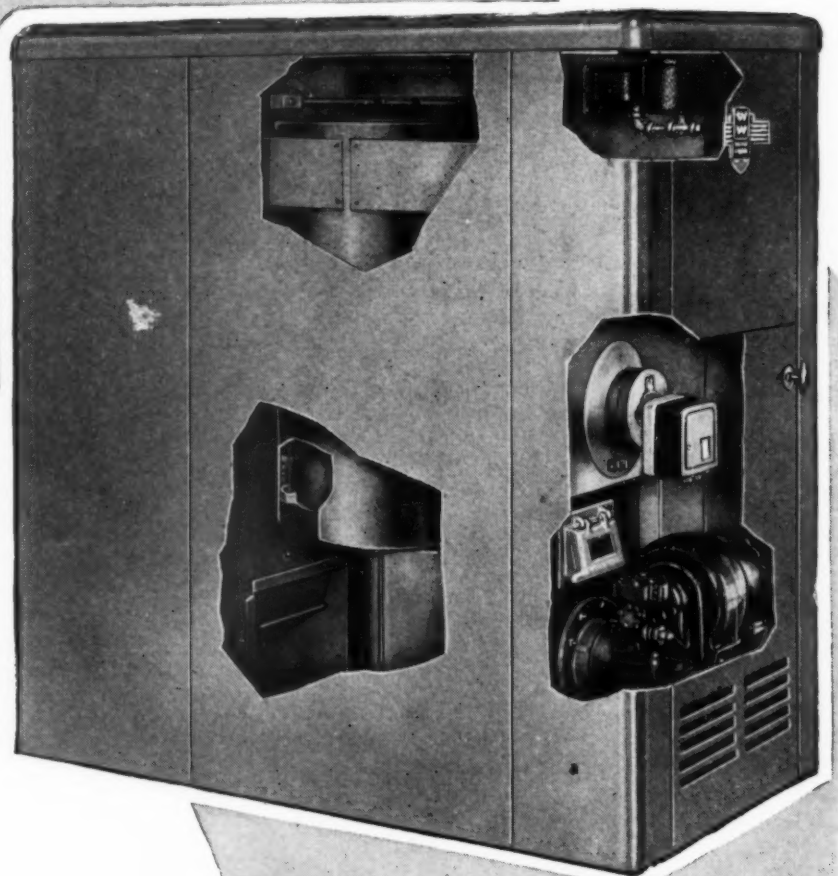
Oil Fired Air Conditioner

Whether you are installing a simple gravity job or the most complete air conditioner, it's what's under the casing that counts for your customer's satisfaction —and for a trouble-free sale for you.

**It's
What's
Under
the Casing
that
Counts !**

A modern compact, attractive unit, economical to buy—economical to operate. It is enclosed in an eye-appealing casing that is a compliment to the most modern basement — but what is equally important to you—because of the efficiency and quality of what is UNDER that casing, you are saved annoying service calls.

Furnaces for every size home and every type fuel — from gravity models to complete air conditioners.



THE WATERMAN-WATERBURY COMPANY

1122 Jackson St. N. E.

Minneapolis 13, Minn.

AA Survey of the Gas Situation

IN an effort to determine the present status and future expectations of gas for house heating, AMERICAN ARTISAN some weeks ago prepared and submitted to several hundred gas utilities a questionnaire asking:

- (1) Are you now taking additional gas heating load.
- (2) When do you think you can take more heating load.
- (3) Do you insist on an approved furnace or burner.
- (4) Do you have a local code specifying proper installation.
- (5) Do you insist on certain controls on conversion burners.

From the mailing just under 100 usable replies were received. Many companies did not return their questionnaire because it is contrary to the company's policy to give out such information. Some other questionnaires were contradictory or insufficiently filled in and were disregarded.

Additional Load

Quite contrary to opinion, two thirds or about 66 per cent of the utilities reporting, state they *will* take additional house heating load *now*.

But one half of these willing to take additional load will do so only under some provisos. For instance, many will take new load in new houses which have been approved for gas. Many will take additional load on some of their lines, but not all over their system.

But even more important, however, is the fact that 34 per cent of the companies willing to take additional load are supplying manufactured gas with a Btu content in the 500-600 level and, probably, a gas too expensive for popular use. Of the 66 per cent supplying natural or mixed gas and willing to take additional load, 16 per cent are located in the Southwest; 21 per cent are in the Far West; 22 per cent are in the Middle West; 21 per cent are in the East; the remaining 20 per cent are in the deep South and Southeast. Therefore, almost 80 per cent of the utilities reporting they will take new load and using natural gas are located in areas where the annual heating demand is not heavy and where floor furnaces, circulating heater, etc., are popular.

Standards

In almost one half the areas reporting, there is no Standard applied to the gas burning equipment installed, in other words, any type or make of gas furnace or gas burner can be installed. In the other half of the areas, a Standard of some sort—but mostly AGA approval—is in force.

In only one-third of the areas reporting is there in effect a local Code or Ordinance which prescribes the way in which a furnace or burner shall be installed. In two-thirds of the areas a furnace or burner can be installed any old way.

Seemingly, gas companies have learned that a gas conversion burner must have certain controls if safety

and satisfactory operation are insured. The survey disclosed that only 10 per cent of the utilities permit conversion burner installation *without* controls. The other 90 per cent—in most cases—insist that there shall be an automatic safety pilot, automatic gas valve, gas pressure regulator, approved draft hood, room thermostat, limit control, and the AGA Seal of Approval.

Supplementary Gas

Each utility was asked whether or not Butane or Propane is being introduced into the lines either through sub-stations, booster stations, etc., and if so, was the addition made in order to increase pressure, or raise the Btu content, or to increase the gas quantity. Of some interest is the fact that one-third of the companies reporting are using one or more of these methods to insure gas supplies in peak seasons. Also, an appreciable number of utilities announce plans to use such auxiliary means this coming winter.

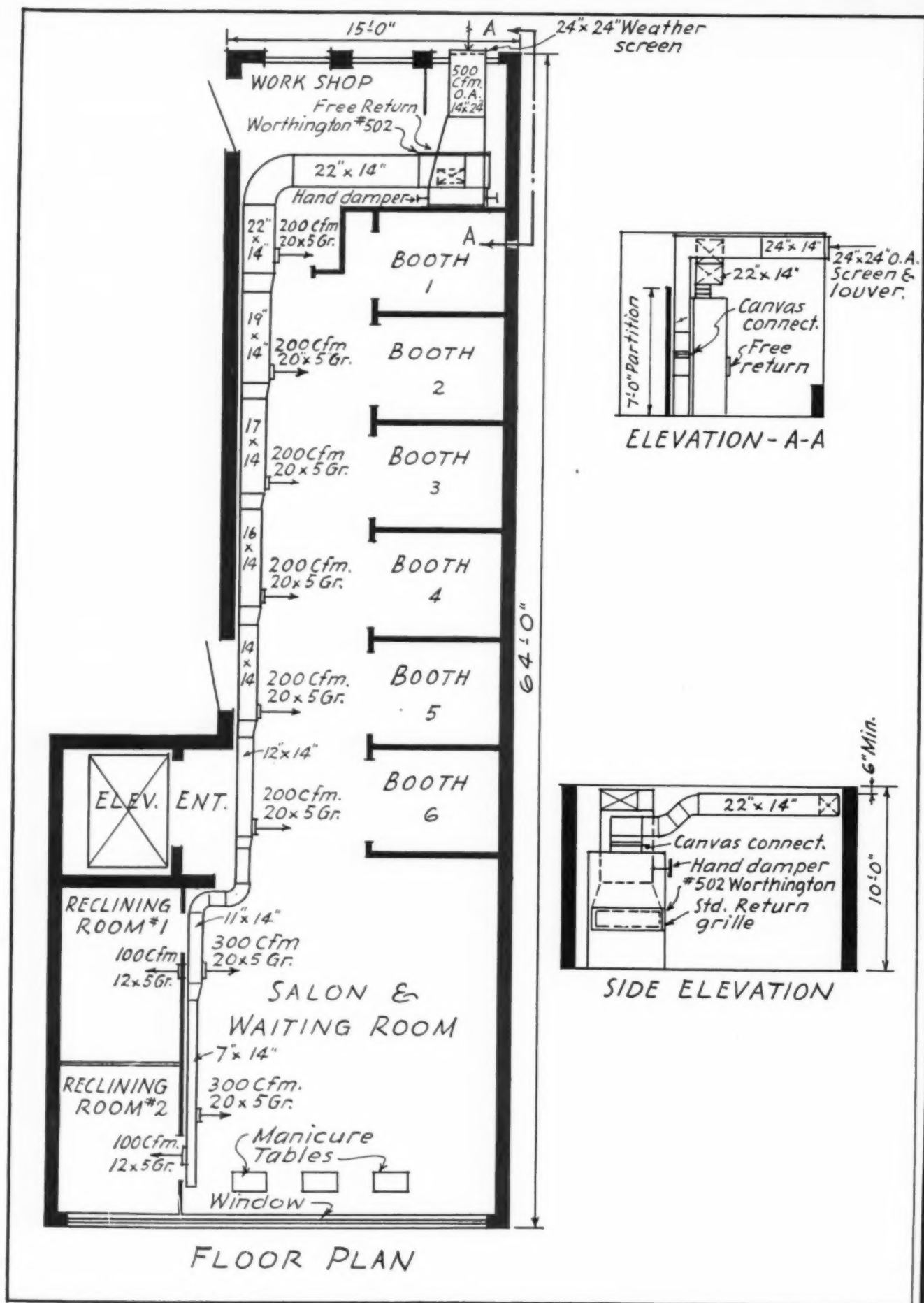
As a general statement, the two chief factors prohibiting the acceptance of additional house heating load are—(1) lack of sufficient gas either natural or manufactured and (2) inadequate distribution systems. Utilities were asked to state approximately when additional load could be taken in line with plans now in process—reports show an additional 25 per cent load anticipated by the end of 1947; another 25 per cent available by the summer of 1948 and another 25 per cent increase by the spring of 1949.

A somewhat similar survey conducted by an agency in the gas field showed about four million meters will be available for gas house heating load connection by the spring of 1949. This does not include new houses where there are now no meters or gas being used.

Miscellany

Pipe lines now under construction plus the use of new gas making processes, plus incorporation of liquid petroleum will, together, help the situation in many areas, but shortages and scarcities will make the problem largely local in nature. Gas reserves are plentiful, but getting gas from where it is to where it is wanted is a real problem. With demand for gas for all uses rising at a rate of about 10 per cent each year, the billion dollar program announced to expand distribution will help if the steel shortage does not curtail spending.

Government and the gas industry believe that the Appalachian area which uses piped natural gas should have a fairly adequate supply; the east north central states will show improvement if and when new pipe lines to this area are completed; New England which uses mostly manufactured gas has many areas where additional house heating load may now be added, but increase in either manufacturing or distribution facilities will be slow in coming; all areas where natural gas is close at hand probably will have increased capacity within a short time.



Comfort Cooling a Beauty Salon

By R. C. Nason

In the merchandising of cooling equipment it is important to take into consideration the individual needs of the establishment that you are contacting as a prospect. From the standpoint of the comfort needs of the customers a beauty salon is an excellent prospect.

ONE of the likely places to look for comfort cooling sales opportunities is the beauty parlor, or hair-dressing salon. As an example of this type of job, Consolidated Conditioning Corp. of New York City made a recent installation of a Worthington 5-ton unit with distributing ducts in a second-floor shopping-district establishment.

One gets only half the story from the accompanying illustrations because in estimating a suitable cooling system for this type of establishment many of the load factors are changeable. For example, in this salon, fronting 22 ft., with depth of 64 ft., there are eight electric hair driers of 8 ampere rating each in almost constant daily use. Collectively they dissipate almost 7,040 watts of electricity per hour.

Heat Loss Difficulties

A further complication is the fact that the unbroken stretch of 22 ft. of front window space that faces east, is subject to morning sun radiation. Another point would be the six booths which, though not partitioned to the ceiling, are enclosed on three sides. Other contributing load factors are the vapor released from steam sterilizers and from shampooing and the heat released by the two 15 amp. permanent wave machines.

In further sizing up the area to be cooled the engineer had to consider that the front windows are usually closed and the rear, where the workshop is, faces an air shaft that runs up two stories above the salon and is of small area. Sides of the room are without windows or other openings. The customer waiting space is near the front.

Though this area is carefully arranged as to comfortable lounges and chairs, it is also near the large front window. Not the least important additional factor is that the salon heats up early in the day because of the eastern exposure, then as soon as customers arrive the driers, wavers and other machines start to operate. Customer traffic is heavy and, without his Consolidated cooling plant, the proprietor has no way of cooling the premises.

Still two more points to be considered in planning the duct and machine cooling unit arrangement here would be that at the front are two small fully enclosed rooms wherein customers can recline for beauty treatment. The doors of these rooms are likely to be closed much of the time. In the rear, as already indicated, is the small workshop where employees prepare hair dyes, mix cosmetics, perform other elementary chemical duties, to which are coupled smoking by the hair-dresser's 20 employees, and clothing changes, though there is a separate washroom. But this does not come within the scope of the new plant.

Temperature Difference Small

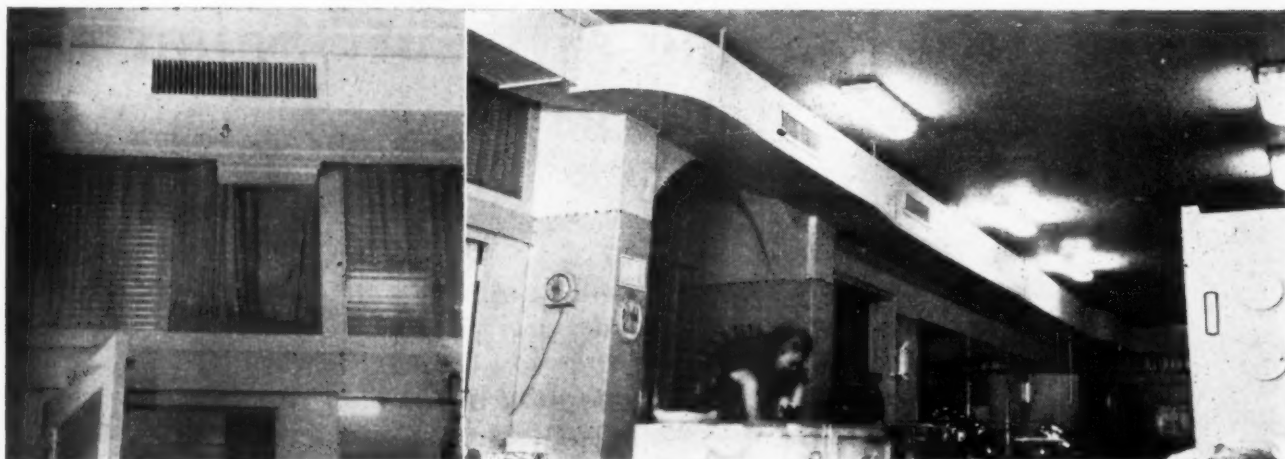
In coping with the beauty salon merchandising market the desirable cooling increment usually is small, often from 5 to 10 deg., for example, but getting rid of humidity is a major consideration. Moreover excessively low temperatures are undesirable since customers often are only partly clad and their hair may be damp. With these data basic, it is readily understandable that the Consolidated Conditioning Corp. decided to place the 5-ton unit in the rear shop. Optimum room temperatures during occupancy are from 70 to 80 deg. F. dry bulb.

Its main air supply comes from a nearby window on the air shaft. Return-air is mixed with this supply, through the opening provided by leaving off the bottom door of the unit. Thus the air supply to the salon is a mixture of outdoor and return circulation. The supply distribution duct runs off the top of the unit, curves around to the joined wall and ceiling, or 8 ft. above the floor.

Ten grilles were provided (on 8 ft. centers), six of which supplied 200 cfm, two 300 cfm and two 100 cfm. Grille areas are 20 in. by 5 in. gross, except for the two small reclining rooms wherein grilles are 12 in. by 5 in.

Air That System Handles

Total air handled is 2,000 cfm for cubic contents of 7,872 cu. ft., which represents one air change every 4 min. The total work load estimated by the contractor



At the left is a view of the portion of the duct that serves two areas.
On the right is shown the main section of ductwork.

was 50,000 Btu. and capacity of the machine 60,000 Btu., desired relative humidity 51 per cent, temperature reduction not over 10 deg. below that of outdoors. Automatic control is within the cooling unit, which stops and starts the fan and refrigeration. Other details can be derived from the plan here presented.

Though the velocity of the air delivery through grilles is but 300 ft. min., this is sufficient to carry the throw to the opposite wall. Thence, the air flow is downward through the booth and out the booth opening to the central salon. Here the stream enters that of the return to the cooling unit, passes along the

floor to the rear room and into the unit.

The initial discharge velocity is recognized as being low enough so that it is draftless, a requirement that had to be met by the contractor. The duct, fully exposed, was painted old rose to match the general salon decoration. The proprietor stated that he has found that a good psychological effect is produced by having the duct exposed in that human nature, being what it is, people tend to feel cooler than thermometers indicate, when they see physical evidences of a comfort cooling plant of this type in operation.

Those Famous Seven Steps

- | | |
|--|---|
| 1. Air at a satisfactory temperature | 4. Air free of dust, dirt, smoke, pollens |
| 2. Air containing proper amount of water vapor | 5. Air free of staleness |
| 3. Air moving constantly but imperceptibly | 6. Air free of germs and bacteria |
| 7. Air of adequate density | |

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Current Developments

In Air Conditioning

By G. K. Marshall

Commercial Engineering Division, Air Conditioning Dep't
General Electric Company

With the general acceptance of air conditioning by the public it has succeeded to widespread popularity but there are many misconceptions about uses and applications of this comfort aid. This article offers some valuable information on the present and future status of the field.

ANY discussion of current developments in air conditioning will lead to the consideration of several types of air conditioning units. First, let us examine the room air conditioner. This type of unit is a bid for mass acceptance of residential air conditioning and all indications are that it will be successful. It is built in two types, namely, window units and floor units, which derive their names from the method of mounting. The window units are placed on the window sill and the floor units on the floor. The heat extracted from the room air is usually transferred to outside air that is circulated through the unit, hence the reason for locating the unit in or in front of a window. The moisture taken from the air is re-evaporated into this same outside air and is thus disposed of. This design eliminates the need for plumbing connections and requires only an electrical connection which can be a simple plug not unlike the type used in plugging in a radio or floor lamp.

Water-cooled units have been made and may be continued. They involve the cost and difficulty of plumbing connections, but have the questionable advantage of not requiring an outside air connection and consequently can be located anywhere. These advantages are questionable because ventilation is a prime requisite of air conditioning, and while it can be obtained by slightly opening a window, it is more effective when provided by the air conditioner. The air conditioner provides positive ventilation almost independent of

wind and it filters the air. Moreover, when a small percentage of fresh air is added to the room air passing through the air conditioner, odors that otherwise might become objectionable are diluted.

Size of Units

Room air conditioners have been built in sizes as small as one-quarter horsepower; however, it has been generally proved that one-half horsepower is the smallest practical size. A small room air conditioner consumes only about 750 watts. This size will take care of most bedrooms and will do an acceptable job in small living rooms, providing the room and its windows are reasonably well shaded. Although three-quarter horsepower, one horsepower, and larger units will be built for larger rooms, there is a practical reason which limits their size. Larger rooms often require better air distribution than can be provided by one unit, and as a result better performance is obtained with two smaller units. Room air conditioners have performed admirably, and they constitute our best means of bringing summer air conditioning within reach of everyone. They are true air conditioners too, performing all of the functions of true summer air conditioning—cooling, dehumidifying, filtering, circulating, and ventilating.

The units built in the past have been excellent, but this does not mean that we can stand still. Our development obligations are clear: we must lower the price and reduce the size and weight in order to increase their portability and make them easier to install, and we must improve their appearance. Although these units will provide positive ventilation of clean air in

Paper delivered at 1945 Housing and Heating Conference, sponsored by Pennsylvania State College, Division of Fuel Technology.

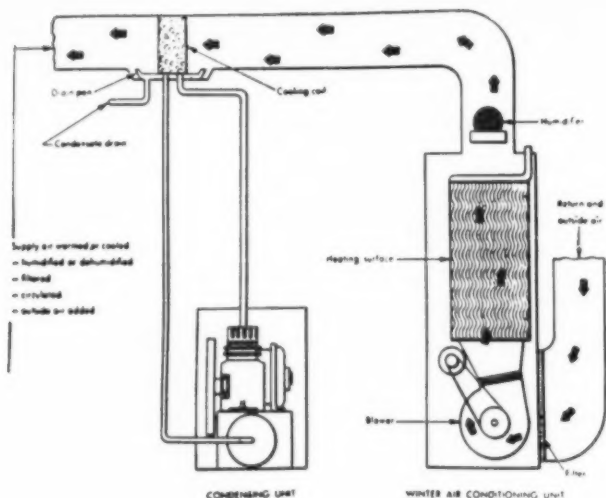


FIG. 1. CENTRAL PLANT AIR CONDITIONER WARM AIR TYPE

the winter, many users do not feel a need for this benefit. Consequently, unless the units are particularly good looking and take up but little space, the user will prefer to store them for the winter. It behooves us, therefore, to make them light and easy to install. Fortunately, this goes hand in hand with improvement in appearance and reduction in size.

Central Plant Systems

The alternative to the room air conditioner is the central plant air-conditioning system. In choosing a method of air conditioning, however, these two are not strictly alternatives, but rather complements, because the latter system is a step beyond the room air conditioner. Hence, when more than one or two rooms are to be air conditioned, the central plant system should be considered. The functions of this system are the same as the room air conditioner, namely, cooling, dehumidifying, filtering, circulating and ventilating. Accomplishing this throughout the entire house brings to mind immediately the use of a duct system which, in turn, suggests the type of heating, i.e., forced warm air. Thus, the central plant summer

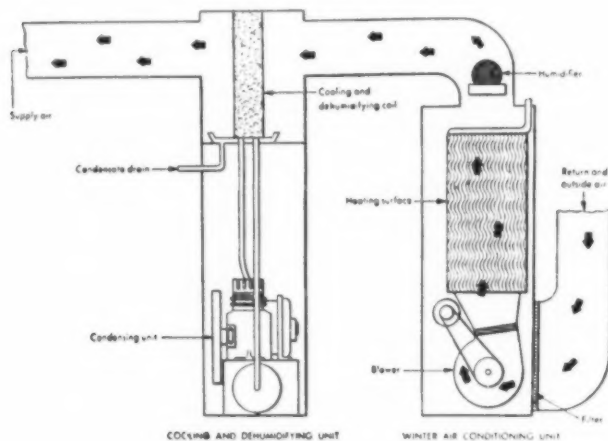


FIG. 2. CENTRAL PLANT AIR CONDITIONER UNIT WARM AIR TYPE

air conditioner more or less demands the use of forced warm air heating, since, with the use of a duct system common to both, the two can be nicely coordinated into a year-round air-conditioning system.

A forced warm air heating system in its modern form heats, humidifies, filters, circulates, and when called upon can ventilate the air in a home. To complete the requirements of year-round air conditioning, it is necessary to add only cooling and dehumidifying. Therefore, if we have a forced warm air heating system, install an air-conditioning coil in the main duct trunk of that system, and connect a condensing unit to the coil, we have added all the functions required of a complete, year-round air-conditioning system, as in Fig. 1. The condensing unit should be located so that noise and vibration will not be transmitted to the living quarters of the home, or the unit should be isolated by a suitable enclosure. In order to facilitate such an installation, one manufacturer has combined the condensing unit and the coil into a single unit so

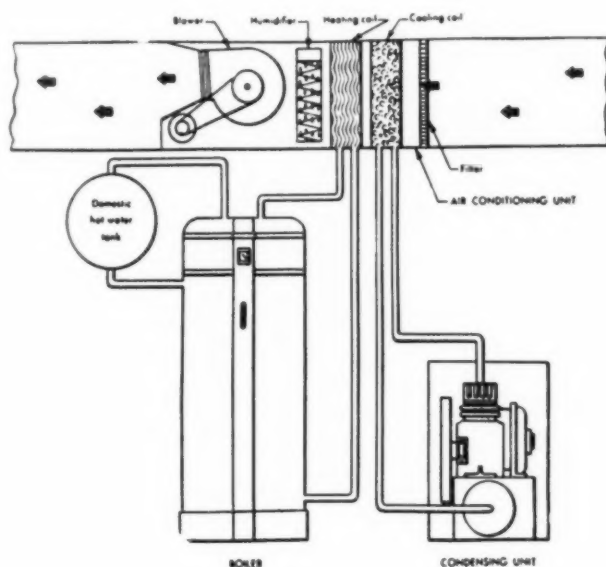


FIG. 3. CENTRAL PLANT AIR CONDITIONER INDIRECT SYSTEM

that the installation work is reduced in setting the unit close to the furnace, arranging the ducts for air to pass through the cooling unit, insulating and making the usual electrical and plumbing connections; this unit is illustrated in Fig. 2.

While it is apparent that summer air conditioning and forced warm air heating are easily combined into a year-round air-conditioning system, the foregoing is not intended to preclude the use of steam and hot-water heating equipment. The air does not have to be heated directly as in a warm air furnace; it can just as well be heated indirectly by a boiler and a steam or hot-water coil. Generally, however, economics favors a warm air furnace, but the indirect system also has advantages. Fig. 3 shows the indirect system using an air conditioner, boiler, and condensing unit; the steam coil in the air conditioner is supplied by the boiler and heats the air in winter. With this system, radiation is easily added where it is most im-

portant as shown in Fig. 4, in bathrooms, kitchen, garage, and in some cases the game room. Thus, the split-type system, which has received such favorable comment from home owners, is obtained. Another advantage of this system is that the boiler can provide year-round domestic hot water which is not easily obtained with a direct-fired, warm air system.

These central plant systems can be added to a heating system. This is an important point because usually the home builder or purchaser is stretching his pocket-book. In any event, it is often convenient to postpone for a few years the expense of year-round air conditioning. In such cases the heating system should be designed by a competent air-conditioning engineer. There are important considerations such as duct sizes, outlet locations and insulation which are best taken care of when the heating is installed. This is not to say that air conditioning cannot be added easily to existing warm air heating systems, for it can be; however, it is better and usually less expensive to plan for the year-round system in the beginning.

For those who will plunge right in and install air conditioning in their new home we can add the system shown in Fig. 5. In this case, a self-contained air conditioner can be used in conjunction with a boiler. This unit normally contains an air-conditioning coil, a condensing unit, a fan and filters; a heating coil and a humidifier can be easily added. With this unit and the boiler all the requirements of air conditioning are met. This system will provide year-round domestic hot water and is the basis for a split system if one is desired.

Doubtless, something about the size of equipment is in order. The size is generally expressed in tons of refrigeration or condensing unit horsepower. Usually with this type of refrigeration application one ton of refrigeration can be obtained for each condensing unit motor horsepower. A large house will require a five horsepower condensing unit; however a three horsepower unit has served and will, no doubt, continue to serve the large majority of air conditioned homes. As prices are lowered and the central plant air condition-

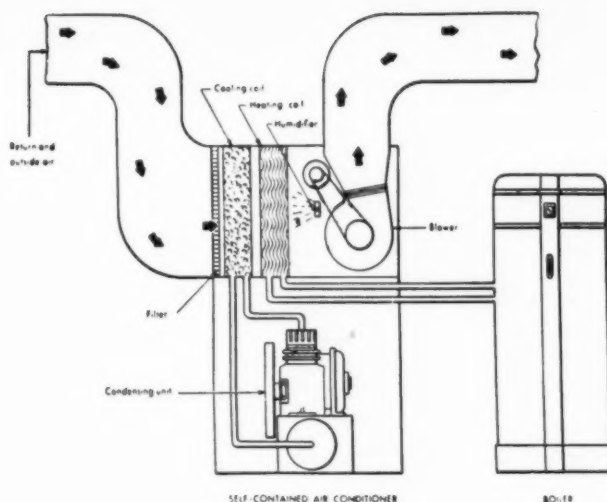


FIG. 5. CENTRAL PLANT AIR CONDITIONER COMPLETE, INDIRECT TYPE

ing market expands, it is expected that two horsepower will be used extensively.

It is likely that the components of some or all of these systems will be combined into a factory-designed, and possibly packaged, year-round air conditioning units. This seems a logical step and it will aid in reducing the price to the home owner, which is of the utmost importance to all of us. It is virtually impossible to present information on prices because of the many variables involved. A reasonable estimate is that the cost of adding summer air conditioning will not exceed the cost of the heating system alone. We are hopeful that we can do much better.

Operating costs vary still more, depending on power and water costs, use of water-saving equipment, climatic conditions, house construction, etc. Generally, however, it will be substantially less than the cost of heating in colder climates.

Finally, a presentation such as this is not complete without some word about the two newcomers—the absorption system and the heat pump. Functionally, neither adds nor omits anything; they provide the same kind of air conditioning as the systems which have been described.

The absorption system is generally considered as a gas-fired unit; actually, however, it can be used with any fuel. Oil absorption systems have been built. In fact, kerosene operated domestic refrigerators have been used, and coal could and may be used. The choice of the absorption or the mechanical compression system is largely economic, dictated by the relative costs of fuel, electricity, and cost of water. Condenser cooling is a less difficult problem with the mechanical compression system. The absorption system, of course, has advantages in quieter operation and fewer moving parts.

The heat pump uses electricity for heating as well as cooling. It is, nevertheless, very efficient, as some 75 per cent of the heat required is taken from cold water or cold outside air. Since the heat pump requires considerably more development, it will probably not disturb the mass market for a number of years.

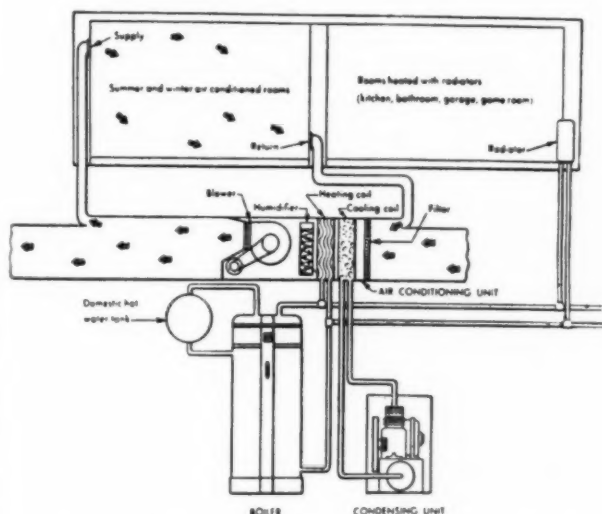


FIG. 4. CENTRAL PLANT AIR CONDITIONER SPLIT SYSTEM



AA Reports on Oil Supply

OUR shrinking fuel reserves have often been the subject of short lived news stories in the past—short lived because published estimates of our vanishing reserves have been followed by disproof by authoritative sources citing the continuous discovery of new reserves substantiated by geological surveys. However, now, when all fuels are often found to be in short supply in some localities, there are indications that the currently publicized “oil shortage” is causing public apprehension about the status of oil as a source of fuel in the future. Perhaps this may be accounted for by the continued discussion in press and business reports contributing to public consciousness of the formidable competition for the petroleum supply.

No Crude Shortage

It appears that all reliable sources of information identified with the petroleum industry agree that there is no basic shortage of crude oil. Oil company officials claim that the shortage is one of transportation, estimate that known petroleum reserves of approximately 22 billion barrels would last at least 12 years at present rates of production, and that new reserves are in continuous process of discovery. The credulity of these opinions is substantiated when it is observed that the manufacturers of transportation equipment, which consume large volumes of petroleum products, plan no curtailment of future production due to imminent petroleum shortages. While these industries compete for the petroleum supply, it would be impos-

sible to reconcile their current expansion programs in the face of the diminishing market that an oil shortage would create.

Published estimates of current demand and production show no evidence of major shortages in refining capacity, except it may be mentioned that some of the existing capacity is not strategically located with respect to transportation and markets and some is obsolete for making present grades of gasoline or unsuitable for the high sulphur crude oils which are available.

According to an official of the Department of Interior, the United States is now using more petroleum products than were used by the whole world before the war and more than we used in any one year during the war. In some areas, demand for natural gas has increased more than 25 percent and 40 percent for heating oil since the end of the war. The oil and gas industry is trying to meet these increased demands with facilities only slightly expanded since V-J Day and not greatly expanded since Pearl Harbor Day due to lack of adequate steel to drill wells, lay pipelines, build tank cars and expand refineries.

Overall Supply and Demand

Current production of the petroleum industry is estimated at 30 percent over 1941, and production for the first four months of this year exceeded 1946 by 28 million barrels. From a production standpoint, the petroleum industry stands comparable to other basic

For several months the editors of American Artisan have observed the numerous reports and opinions on the status of the nation's oil supplies and offer the following information and suggestions to assist in your evaluation of the fuel oil available in your locality in the coming months.

industries such as steel, all of whom have experienced a pent up demand, which, once released, production cannot satisfy in one year's time. In a report of the Oil and Gas Division of the Department of Interior, Secretary Krug cited the precarious balance in some areas between the supply and demand for natural gas, bottled gas and fuel oil. Elaborating further, Director Ball (of the aforesaid division) said that if strikes interfere with output or transportation, if tankers or tank car transportation is inadequate, if the winter is unduly cold, then unless the oil industry performs miracles, there will be shutdown factories and cold homes and perhaps some gasolineless filling stations.

The states along the East Coast, West Coast and Gulf are generally considered as the areas where transportation difficulties will not be as acute as the inland areas which these states surround. In the Middle West, where the waterways have been the economical means to transport liquid fuels, it is estimated that six weeks of transportation has been lost on the rivers on account of flood conditions. If it were possible to make up for this lost time by increasing the number of barges in use, it would be possible to return the current supply in the Midwest to its normal level at this time of the year. But transportation on the Mississippi River is very short and there is no prospect that it will improve until after the coming heating season. Midwest refineries have been forced to shut down and others to operate at reduced and uneconomical rates from the lack of crude oil.

Tank Cars May Help

Relief for the Middle West may be found in transporting fuel oil in railroad tank cars, and this may make an important contribution toward relieving the situation because 450 tank cars are being produced each month. Available tank cars have been running for weeks from Coast areas to the Middle West transporting crude oil to refineries in order that Middle West refining capacity may continue to be utilized in turning out production as close as possible to their maximum capacity. This is considered an uneconomical practice, but a number of refiners have indicated it would be continued until transportation conditions improve.

Refusal to supply new fuel oil customers is more prevalent in the midwestern states of Michigan, Indiana, Illinois, Missouri and Wisconsin. As mentioned above, many refiners will go all-out with complete disregard for economics to fulfill requirements in these states and take care of about 15 percent additional gallonage.

How Our Industry Can Stretch Available Oil

The facts clearly indicate that adequate fuel oil supplies are not dependent upon crude oil reserves and that expansion of transportation and refining facilities is dependent upon the availability of basic materials and the time required to produce them. In its effort to alleviate the situation, the warm air heating industry should recognize that the main difficulty is due to insufficient transportation for refinery products, insufficient economical transportation to refineries located in and adjacent to the oil consuming regions, insufficient storage facilities in some localities and insufficient refining capacity, or at least keeping present capacity at full production, rather than a shortage of basic crude oil. Our industry can assist to ease the situation as follows:

1. Encourage complete filling of all fuel oil storage tanks at the earliest possible date.
2. Advertise and recommend an oil burner check-up service aimed at raising the operating efficiency of as many burners as possible to the highest degree attainable and consistent with operating conditions.
3. Advertise and campaign for the replacement of old and inefficient "oil eaters" as a means to maintain your sales volume and to spread the available fuel oil supply.
4. Familiarize the public with the facts about local shortages and their being the effect of lack of transportation instead of a shortage of crude oil.
5. Acquaint the public with the competitive nature of the petroleum industry as assurance for individual as well as industry-wide efforts

(Continued on page 158)

Minimum Specifications for the Installation Of Gas-Fired Heating Equipment (Part I)

These specifications are prepared by the Rochester Gas & Electric Corporation and are intended as a guide to certain features and practices which will insure the customer the best possible heating with maximum safety and with a minimum of operating cost and trouble. It is intended that in respects not specifically mentioned, the codes and practices of the National Warm Air Heating and Air Conditioning Association and the American Society of Heating and Ventilating Engineers will be followed. These specifications are intended as a minimum standard and are not to be interpreted as a complete guide to the selection and installation of gas-fired heating equipment.

General

THESE SPECIFICATIONS MUST BE COMPLIED WITH IF EQUIPMENT IS TO BE SERVICED BY THE GAS HEATING SERVICE DEPARTMENT OF THE ROCHESTER GAS & ELECTRIC CORP.

(1) Approval

- (a) Gas equipment must bear the AGA seal of approval and must be listed in the current issue of the AGA Directory of Approved Gas Appliances.
- (b) Gas equipment must be approved by the Testing Laboratory of the Rochester Gas & Electric.
- (c) All installations must pass the inspection of the Gas Heating Division of the Rochester Gas & Electric.
- (d) All installations must be made in such a manner that they will comply with the Plumbing Code and Building Code of the City of Rochester.
- (e) All gas-fired boilers, furnaces and conversion burners must bear a permanent name plate on which shall appear the manufacturer's hourly BTU input rating.

(2) Availability of Gas

Availability of gas at the meter location shall be determined by consulting the Gas Heating Division prior to making the installation. In some locations, particularly where large capacity units are to be installed, it may be necessary to enlarge the service pipe before an installation can be made. In most residences the gas service will be found to be adequate, but ample notice must be given to have a meter of proper size installed. Never connect a gas heating unit to the service or inlet side of the gas meter.

(3) Lighting Burners

On new installations of gas-fired boilers, furnaces or conversion burners where the installer is not thoroughly familiar with the procedure, the initial lighting up will be

done by the Gas Heating Service Department. Phone the Department, Main 3960, allowing ample time for a man to be dispatched to the job.

Sizing the Unit

Before the size of the unit can be accurately determined, it is necessary to determine the heat loss of the building. This should be computed from a heat loss survey which takes into consideration the design temperature, and various construction factors of the building, such as insulation, storm windows, etc.

Location of Unit

There are three primary considerations concerning the proper location of the unit:

1. The unit must be so located that it is readily serviceable. All controls, vent pipe, filters, motors, etc., must be readily accessible. The unit must be so located that walls, partitions, posts, etc., do not interfere with the inspection of and repairs to any part of the unit or auxiliaries. Those sides of the unit from which the unit must be serviced should be at least 30" from the wall or other obstructions. The unit must not be located in a small room or compartment where there may be insufficient air to support combustion, unless adequate provisions are made to supply air to the room. The City Building Code covers allowable distances between gas furnaces and combustible or semi-combustible walls. Consult the Code or the Gas Heating Division.
2. The vent should be short. Long vent pipes interfere with proper venting and are costly to maintain. The furnace should be located so that the vent pipe is not over 10 feet long unless special provisions subject to the approval of the Gas Heating Service Department of the Rochester Gas & Electric are made.
3. It is preferable insofar as Limitations 1 and 2 permit, to locate the furnace central to the dis-

tribution system. This provides ease of balancing and permits better distribution with a minimum of noise and electric current consumption.

Chimney

The chimney to which the unit is vented should be clean, should preferably be straight and must always be fully lined with tile or other approved material. If the unit is to be installed in a new home, it is desirable to use fire-lock tile installed with lip down, or bell sewer tile installed with the bells up. If ordinary glazed chimney flue lining is used, care must be used to align tiles one directly over the other with the smallest possible space between, and they must be securely cemented in place. If the unit is to be installed in an existing building in which the chimney is not tile lined or the lining is determined to be in poor condition, an approved liner should be installed. If it is necessary to line a chimney, obtain specifications from the Gas Heating Division of the Rochester Gas & Electric.

Vent Connections

The draft hood shall be connected directly to the furnace outlet in accordance with the manufacturer's design, and as approved by the American Gas Association. Vertical draft hoods shall never be installed in horizontal or semi-horizontal position. The furnace

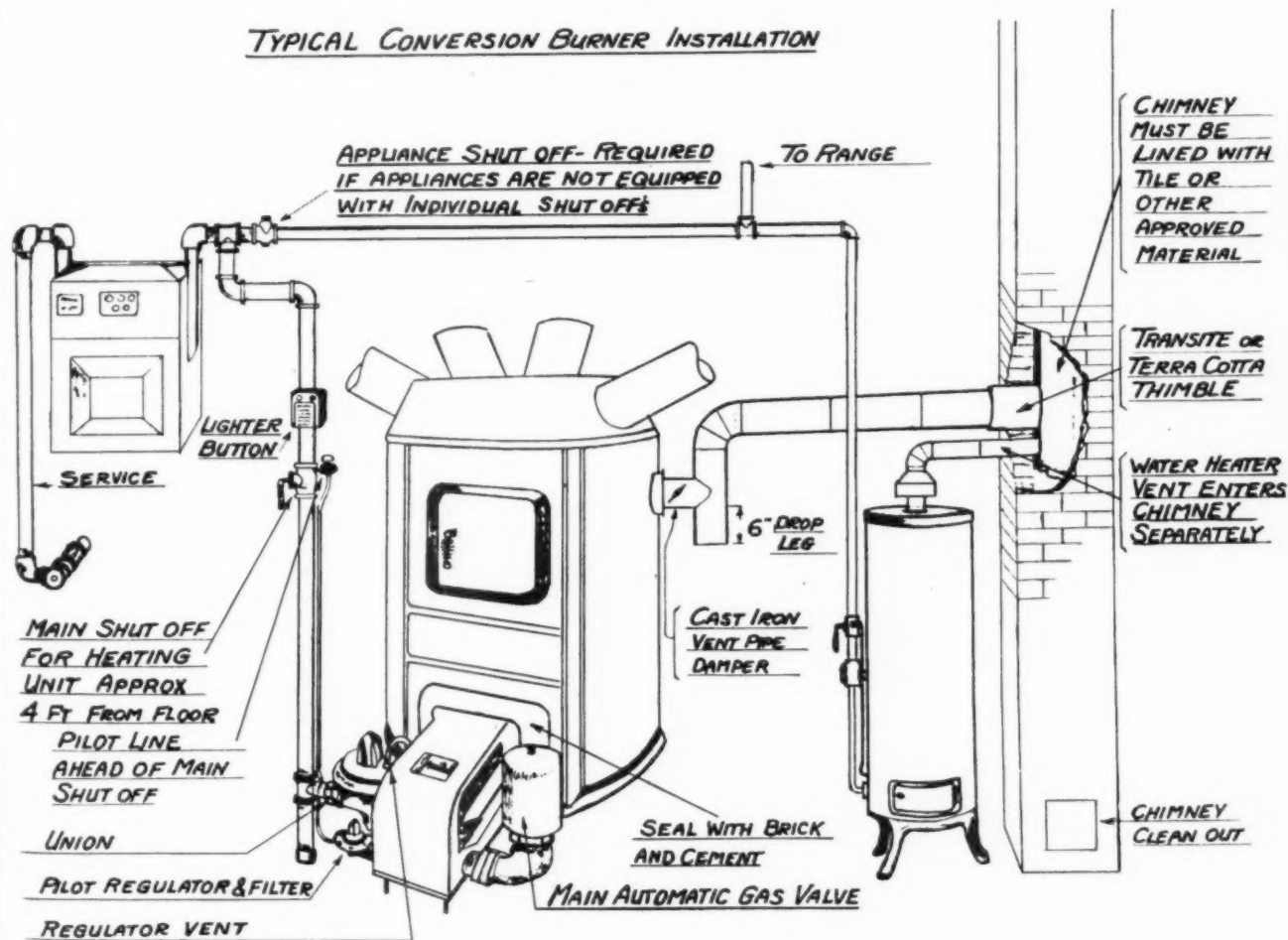
vent pipe shall be made of not less than 26 gauge galvanized Armco, Toncan or other corrosion-resisting material and shall be of the same size as the outlet of the unit. The vent pipe should be as short and direct as possible, graded slightly up toward the chimney. Vent pipes on gas installations should be run so that joints are made up with small end toward equipment, large end toward chimney. A thimble of Transite or Terra Cotta or equivalent shall be provided and cemented into the chimney where the vent pipe enters the masonry chimney. Never cement the vent pipe itself into the chimney unless it is of non-corrosive material. If a rigid material such as Transite is used as a vent connection, approximately 18" of the connection at the unit should be of metal, so installed as to insure servicing without disturbing the rigid material. If vent pipe is concealed, provisions must be made for inspection and replacement. Other appliances such as water heaters should have vent or smoke pipes tapped separately into the chimney. If this is not possible consult the Gas Heating Service Department.

Provision must be made to clean the chimney below point where vent pipe enters.

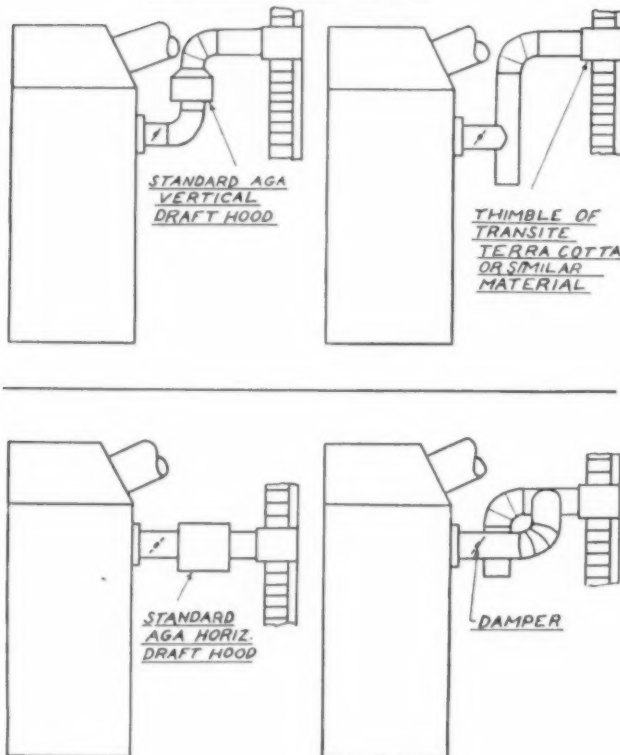
Gas Line to Unit

In new homes all appliances can be supplied through one fuel line provided it is properly sized

TYPICAL CONVERSION BURNER INSTALLATION



TYPICAL VENT PIPE ARRANGEMENTS



to accommodate all appliances. In existing homes the gas heating unit should always be supplied through a separate gas line from the meter location. The size of pipe can be determined from the following table for various size units. Where other appliances are served from the same fuel line allowances should be made for the gas used by these appliances. In determining the length of pipe, include risers and measure distance along the pipe.

Table for Selecting Pipe Sizes

NOTE: In this table allow for domestic appliances if served from same fuel line.

Btu Input of Unit	Cu.Ft. of 540 Btu Gas	Maximum Length of Pipe in Ft.				
		3/4	1	1 1/4	1 1/2	2
60,000	110	35	150	400	—	—
75,000	140	25	90	250	600	—
90,000	165	15	70	200	500	—
105,000	195	—	45	140	350	—
120,000	225	—	40	100	275	—
150,000	280	—	25	70	175	700
180,000	335	—	15	50	120	500
210,000	390	—	—	30	90	350
240,000	445	—	—	25	70	250

A gas shut-off (preferably lever handle) must be provided and installed in the riser at the unit. A union should also be provided between the shut-off and the unit at a point that will assure ease in removing furnace controls for servicing. (See sketch.) In some cases a shut-off additional to the one supplied with the unit will be required to meet this specification. A drop-leg, at least 4" long, should be provided at the unit to catch scale and dirt. In conversion in-

stallations the drop-leg should extend to the floor to support the pipe.

A line cock should be installed on the gas pipe supplying appliances other than the heating unit if these other appliances are not already supplied with separate shut-off cocks. The installation of piping shall conform to accepted good practice and the Company rules.

In commercial buildings the heating unit or units must be connected to a system of piping and meter separate from other appliances. The Rochester Gas and Electric Commercial Space Heating Rate requires that space heating use must be separately metered. This also applies in multiple dwelling units such as apartments where more than one family is heated from a common heating plant.

Note: If there is any question regarding the size pipe to be used or the metering arrangement consult the Gas Heating Division of the Rochester Gas & Electric.

Gas Pilot Connections

Gas pilot lines should be of rigid iron pipe or aluminum tubing. Copper tubing must never be used to convey gas.

Pilot line shall be equipped with a separate shut-off valve so located as to permit easy and quick operation and shall be designed to indicate "on" and "off" positions clearly.

All pilots must be connected ahead of the pressure regulator and main furnace valve.

Needle valves must never be used in any gas pilot lines.

Each pilot must be equipped with an approved filter installed after the shut-off cock. Approved filters may be procured at the Gas Heating Division Office.

Bleed lines from the main furnace pressure regulator shall vent into the combustion chamber and terminate in burner tips positively positioned with respect to the pilot as prescribed by the manufacturer or the Gas Heating Service Department.

Electrical

All electrical work shall be done in accordance with requirements of local ordinances, codes, rules and regulations of the National Board of Underwriters.

Whenever possible a separate circuit shall be provided for the heating unit.

All units with motors should be protected with a Sentinel Breaker, Cutler-Hammer Breaker or other similar overload protective device—regardless of whether the motor has built-in protection. Breaker must interrupt all current to unit.

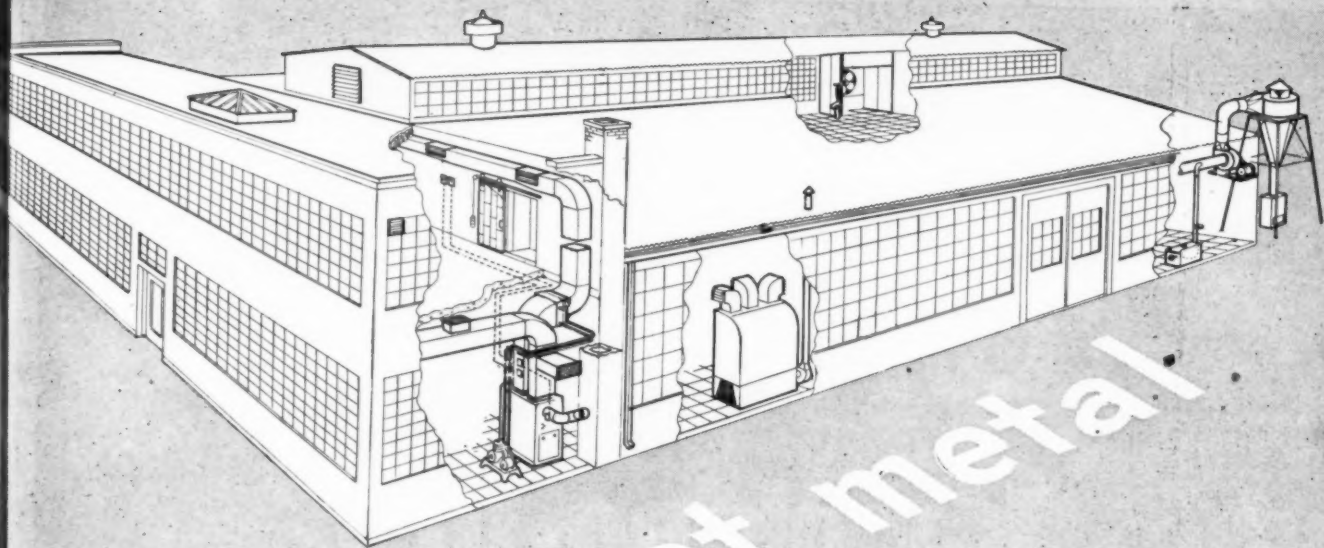
Motors rated at 1/2 H.P. or less may be connected 120 volts, but if 240 volts is available 1/2 H.P. motors should be connected to it. Motors rated above 1/2 H.P. must be connected 240 volts.

All line voltage controls shall be connected to the hot side of the line.

Transformers shall be mounted as close to the unit as possible and shall be of the leakage type.

Install limit controls in thermostat line when re-

(Continued on page 160)



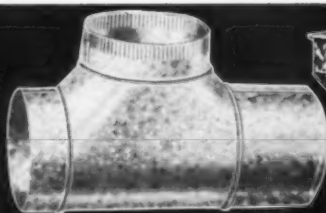
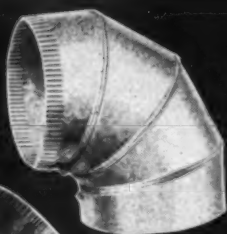
sheet metal Section

DEVOTED TO SHEET METAL CONTRACTING AND FABRICATING



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90° Adjustable Elbow

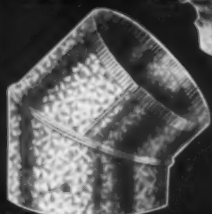
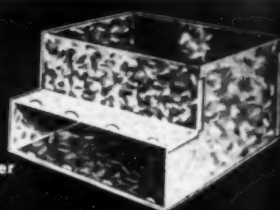


Airflo Tee-Joint

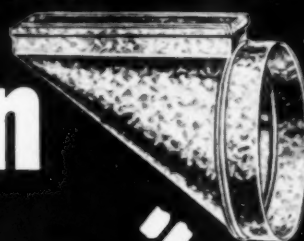


Funnel Floor Pan

Register Pan

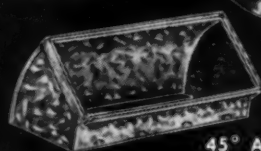
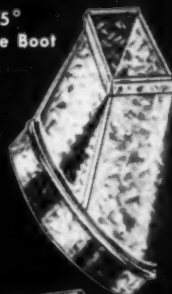


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End Boot

45° Angle Boot



45° Angle

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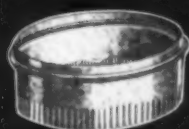
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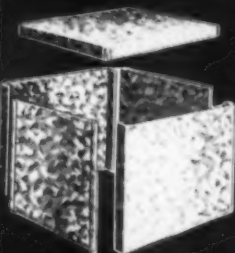
Galvanized LockJoint Furnace Pipe



Casing Collar for Straight Hood



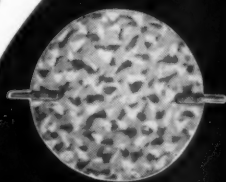
Adjustable Flue Thimble



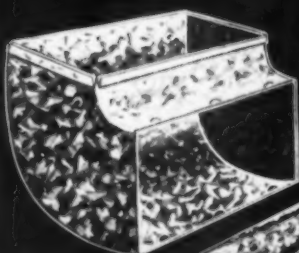
Plenum Chamber



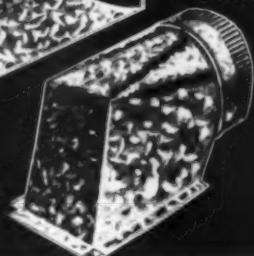
Reducing Collar



Round Volume Damper



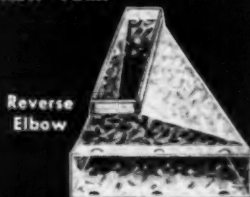
90° Elbow



90° Top Takeoff



Honeywell Register



Reverse Elbow

Milcor Steel Company

Inland Steel Products

MILWAUKEE 1, WISCONSIN

BALTIMORE 24, MARYLAND
CINCINNATI 25, OHIO

BUFFALO 11, NEW YORK
CLEVELAND 14, OHIO

CHICAGO 9, ILLINOIS
DETROIT 2, MICHIGAN

KANSAS CITY 8, MISSOURI

ROCHESTER 9, NEW YORK

Aluminum—For Large Ducts

Experience has demonstrated that there are almost no changes in standard procedure required to put aluminum through our shop machines. . . . But we have found that aluminum does not "erect" like galvanized iron because it "sticks." . . . Also, it cannot be "driven" with the same violence used on galvanized iron. . . . Because of this, contractors have endeavored to work out means of erection which avoid any need for "driving." The report which follows explains and shows the construction employed by several contractors using aluminum in large ducts.

H. J. Otten Sheet Metal Works, Buffalo

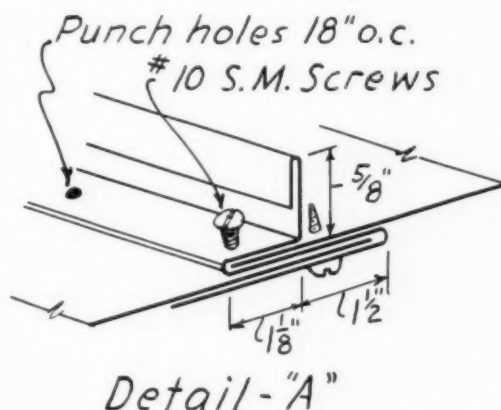
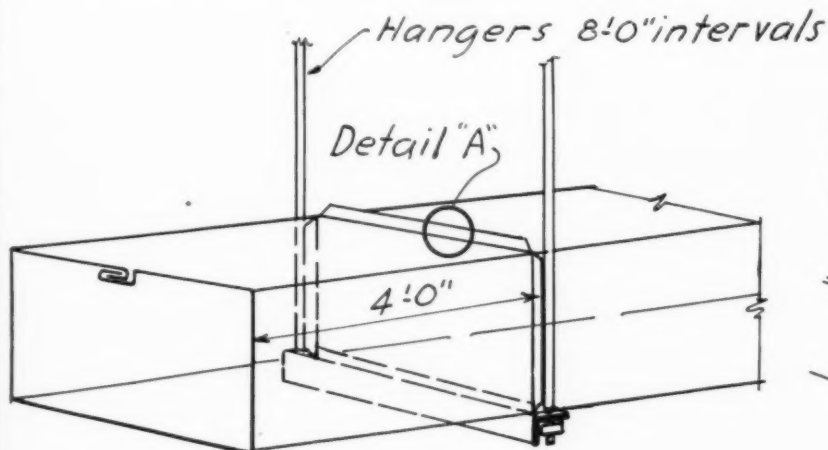
THE H. J. Otten Sheet Metal Works, Buffalo, N. Y. has used a large amount of aluminum for ventilating and air conditioning ducts—much of the work requiring large sized ducts.

This firm buys sheets rather than coils and whenever possible orders sheets 48 inches wide and long enough to form a one-piece, wrap-around section. Thus most ductwork is made up in 4 ft. sections. The upper

limit for such construction is a 4 by 2 ft. duct—larger sizes are made up using Pittsburgh longitudinal seams.

The material preferred is 2S— $\frac{3}{4}$ H usually in .020 or .025 gauges. The larger than 4 by 2-foot ducts are made of .037 to .050.

To avoid the need for any lubricant for connections (Otten has tried oil, water, grease) the seams are made a little looser than for galvanized and this,



The Otten company's method uses a standing seam "S" cleat on all four sides, with the pocket just a little loose and with sheet metal screws on 18-inch centers as shown. Lubricant and driving are eliminated—but the screws pull the several thicknesses tightly together.

coupled with the cleat used eliminates all need for "driving" cleats or sections.

Otten has standardized on a standing seam S-cleat as shown in Detail A. The $\frac{5}{8}$ -in. upstand, double, provides stiffness and bracing. The two "pockets" are each approximately $1\frac{1}{2}$ inches wide. After the S-cleat is formed, holes are punched in both legs at about 18-in. intervals. After the sheet edges are inserted in the pockets, a No. 10 metal screw is run through the holes to bind the sheet edge and two thicknesses of cleat

firmly together.

In the wrap-around size, the slip seam is placed down the center line of the top—on the inside as shown. In larger sizes, the Pittsburghs or slip seams are placed at diagonal corners.

Four ft. sections are put together and hung at 8 ft. intervals on a combination angle and rod trapeze or on angle and band or just bands on small sizes.

With the stiff cleats, short sections and hangers, no cross bracing is employed.

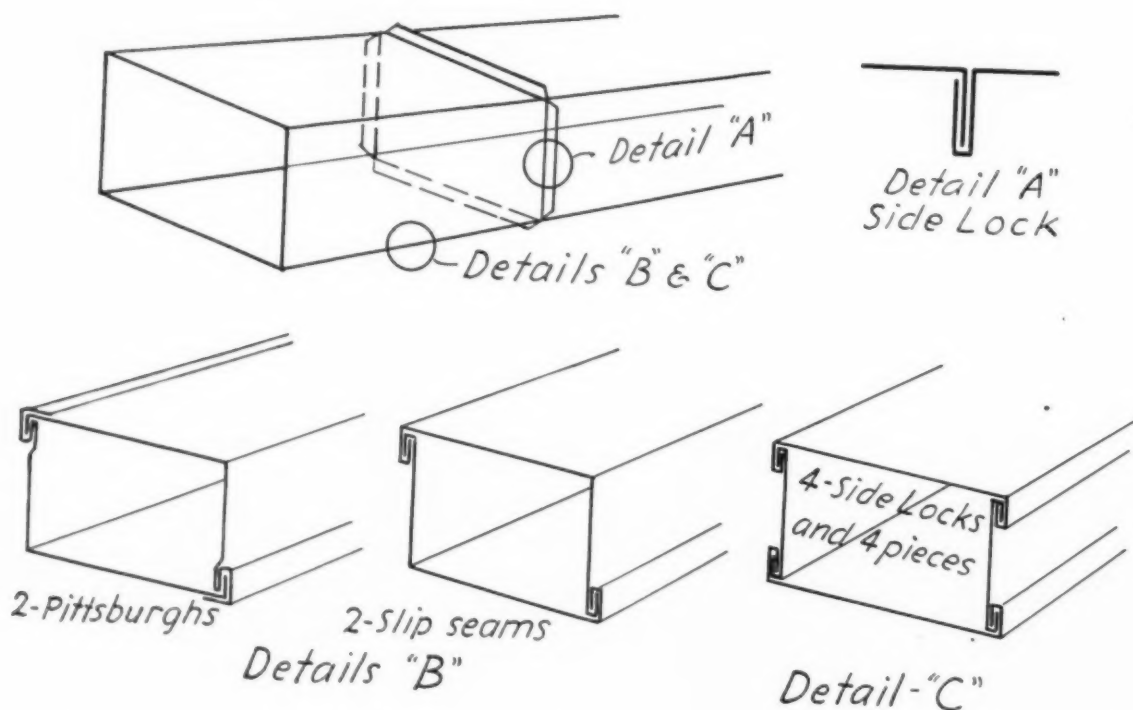
Wm. J. Schmitt, Inc., Rochester



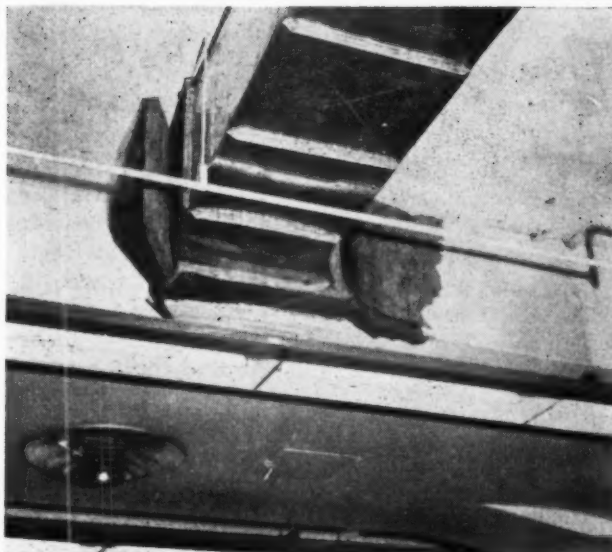
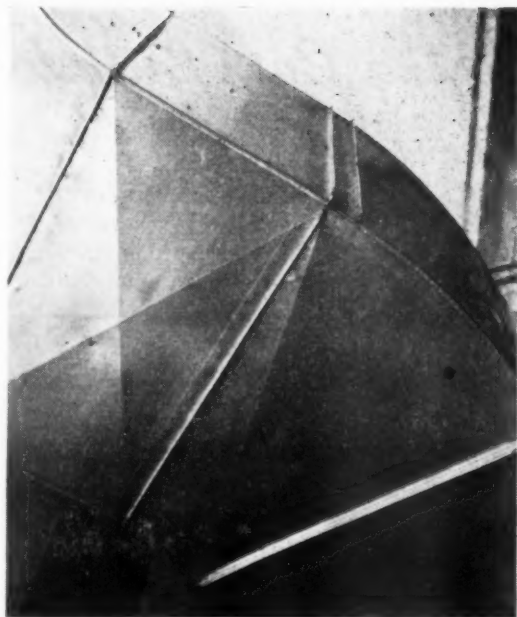
FOR the air conditioning of certain areas in a new plant of the Eastman Kodak Company, the firm of Wm. J. Schmitt, Inc., Rochester, N. Y., used aluminum for interior and exterior ducts some of which were in sizes 5 ft. by 5 ft. and ranged down to 2 ft. by 2 ft. in branches.

Galvanized iron originally specified being unobtainable in time to complete the work as scheduled, surplus war aluminum furnished by Eastman was used. This aluminum was 24 SO, in thicknesses from .025 to .050. The material was furnished in 48 by 144 inch sheets.

It was found impossible to form this material in roll formers so all seaming was done in power brakes. The material showed sufficient stiffness so that only



The Schmitt company's method calls for sections 2 feet long, regardless of size. A standard 1-inch standing seam eliminates any forcing, yet gives a tight connection. Either Pittsburghs or slip seams are used horizontally.



At left is a large exterior duct showing the standing seams and cross braking for stiffness. Above—Interior duct insulated as described in the text. Note same construction used on small ducts

the largest sizes required any unusual extra stiffening methods.

On most of the work, two types of longitudinal seams were used. In some of the work Pittsburgh seams were used, (Detail B) usually on fittings, and some of the straight duct was also made with Pittsburghs. But most of the straight duct was made with slide locks and the duct sections were formed in four separate pieces as shown in Detail C. This construction was used to facilitate sliding which is difficult on aluminum and often necessitated oiling.

All sections were made in 2-foot lengths, regardless of size of duct, to utilize the standing seams at these joints as a means of stiffening and to provide the necessary strength.

To join sections together, standard 1-in standing seams (Detail A) were used all around the transverse sections to give the required strength.

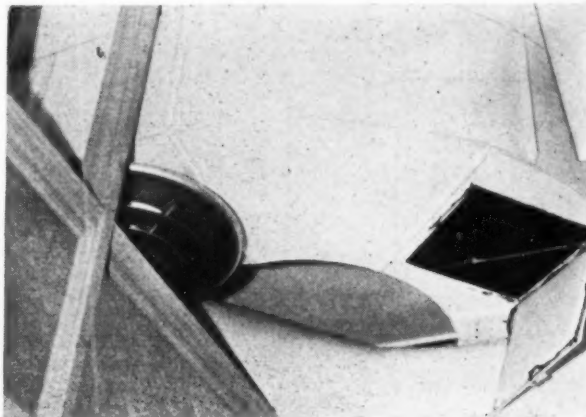
Practically every section had cross braking on all four panels. This was used (a) for appearance; (b) for extra stiffening.

For the large exterior ducts, the extra stiffening re-

quired was obtained by placing in the interior of the duct a 4 by 4 in. aluminum angle running longitudinally along the center bottom and center top lines of the duct. Also, the ducts were made up as panels, in short lengths to obtain the benefit of the standing seams at short intervals. Two photographs of exterior ducts show this construction.

Air distribution is obtained with anemostats which were placed in the bottom of the branches as shown in two photographs. To permit cleaning, access openings with special air tight doors are located at frequent intervals along the ducts.

Insulation consists of a 2-in. Fiberglas mat wired in place on the aluminum. Then a light weight expanded metal lath was fastened over the insulation and on this one rough coat and two finish coats of plaster were applied. Final finish is two coats of paint. One photo shows this application.



For crowded interior quarters, the 2-foot duct lengths expedite installation—and provide necessary stiffness for aluminum. The special clean-out door described is shown. Note cross-braking is used on all four sides.

Goergen-Mackwirth Engineering Co., Buffalo

FOR industrial ventilation and commercial air conditioning, where duct sizes require gauges heavier than 26 in galvanized, the Goergen-Mackwirth Engineering Company of Buffalo, N. Y. uses aluminum in thicknesses from .025, .032, .040 and, on occasion, .050. The temper determined from experience is 2S- $\frac{3}{4}$ H or $\frac{1}{2}$ H with $\frac{3}{4}$ H used for the larger ducts and heavier gauges.

For the most part, the company buys aluminum in cut sheets which are delivered in wood crates and pays from 28 to 30 cents per pound. With usage increasing, the company plans to buy coils to reduce the cost per pound.

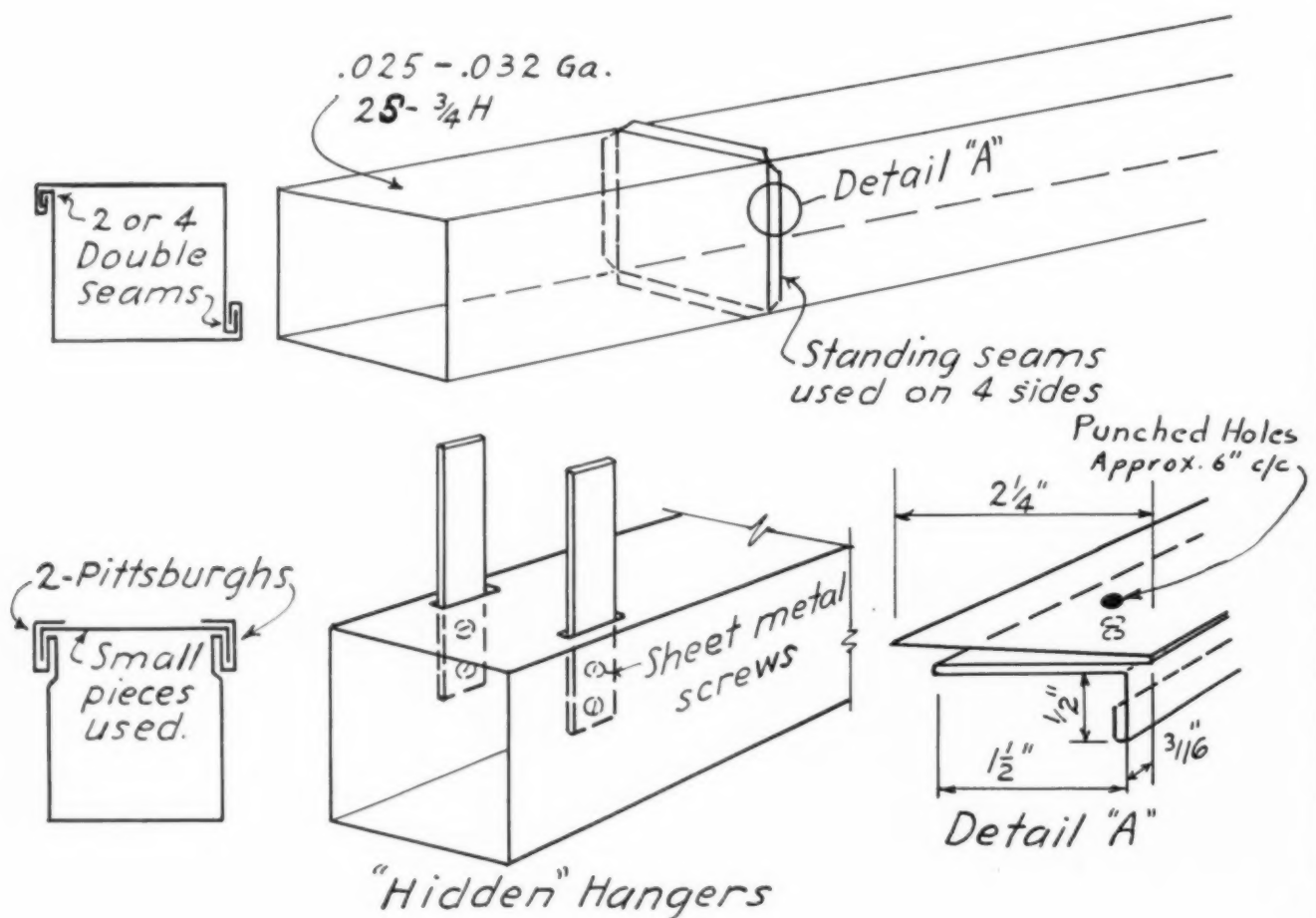
The general practice is to make duct sections using two or four Pittsburgh seams longitudinally—two seams on smaller dimensions; four seams for the larger sizes. To use up some of the small pieces which appear in cutting, some small ducts are made with one piece forming three sides and a top piece on which both edges are Pittsburghed. On two Pittsburgh con-

struction the seams are on diagonal corners.

In order to minimize the "sticky" characteristic of aluminum, the company has developed a special form of standing seam S-cleat as shown in a detail drawing. The radius of each "pocket" is made at least two thicknesses of the material—this results in a pocket which takes the incoming edge with a minimum of friction. To further ease the friction the fold is not as "tight" as it would be in galvanized.

The lack of frictional holding between sheet edge and cleat is largely compensated by punching holes through the three surfaces at approximately 6 inch intervals—through these holes sheet metal screws are run so that, on completion, the two sheets and the three thicknesses of cleat are all firmly screwed together.

This construction has been found time saving in that it eliminates all reason for "driving" section edges into tight cleats and eliminates the use of drive cleats which save time on galvanized but cause difficulty in aluminum.



Goergen Mackwirth likes the loose pocket, standing seam "S" cleat on four sides. Punched holes at 6-inch intervals take metal screws which pull all edges tightly together. The "hidden" hanger mentioned in the text is shown—this eliminates all dirt catching exterior hangers and lends itself to insulating.



Photos above and right show Goergen Mackwirth ducts in a department store. Note "hidden" hangers, the standing seam cleats, and the cross-braking for stiffness.



The company makes up aluminum sections in lengths identical with galvanized practice—where there is need for additional stiffening because of extra size, the lengths are shortened. Short lengths with the stiffening characteristics of the standing seam S-cleat described have removed all possible trouble from the less stiff aluminum.

On usual ventilating work the hangers used are identical with galvanized practice—angles and rods; wrap around straps; side straps; etc., but for commercial air conditioning where the ducts are exposed, the company uses its "hidden" hanger. Slots are made in the top of the duct and into these a strap hanger is run and screwed in place by two screws run in from

the outside. All that shows on the side of the duct are the two screw heads. The strap is practically invisible where the duct is tight against the ceiling.

Goergen-Mackwirth has for years used spot welded fittings in preference to seamed—this practice is continued in aluminum and the company reports satisfactory spot welding using about the same timing; the same pressure, but greater power.

The company finds almost no difference in shop time required to layout and fabricate pieces and sections—up to date the same number of men are used in the erecting crews—not much time saving has been noted in erection so the labor cost *per job* is the same as or nearly the same as in galvanized.

Mannen & Roth Company, Cleveland

THE Mannen & Roth Company of Cleveland, Ohio, has found it necessary to supplement their available supply of galvanized sheets with aluminum in order to keep abreast with the construction of an addition to the Polsky Store in Akron, Ohio. After construction was started, the owner decided to air condition the entire store instead of only the addition, and this caused considerable increase in poundage of sheet metal required for duct work.

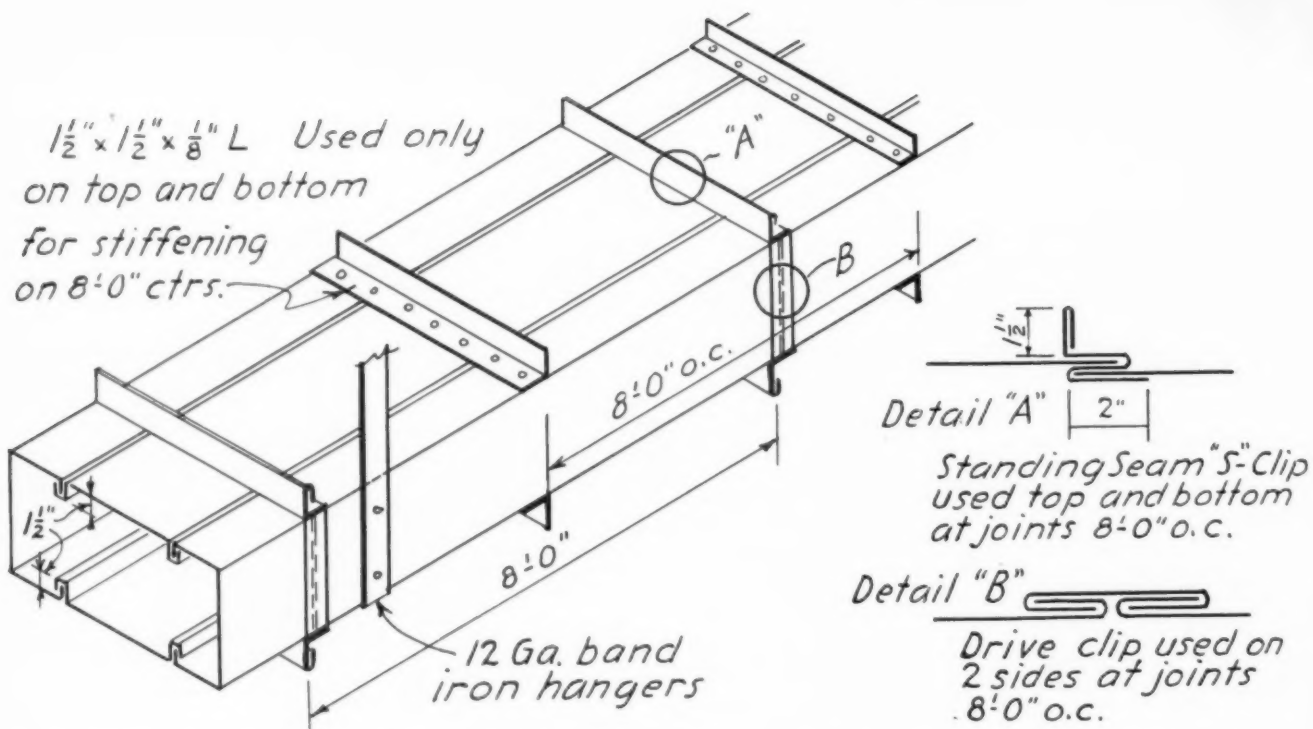
To date, about 150,000 pounds of galvanized and about 10,000 pounds of aluminum sheets have been installed. It will require about 20,000 pounds additional of galvanized and 40,000 pounds additional of aluminum sheets to complete the installation.

The largest ducts are 96 by 30 inches and Mannen & Roth are using .032 and .040 2S $\frac{1}{2}$ H and 3S $\frac{1}{2}$ H aluminum for ducts less than 60 inches wide and 18 and 20 gauge galvanized for ducts over 60 inches wide.

The drawing shows the construction of the larger aluminum ducts. The corners and the brakes forming the $\frac{1}{2}$ -inch standing seams running lengthwise to the duct are formed in a brake, and insure stiffening the



Mannen & Roth like to erect aluminum ducts in long lengths to take advantage of the labor saving possible because of the light weight.



entire length of each section. A standing seam "S" cleat at the top and bottom of each joint, 8 ft. on centers, and $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{8}$ -inch angles, also on 8-ft. centers but intermediate with the "S" cleats, contribute the strength and rigidity required for larger-sized ducts. Also, the angles and "S" cleats, being on 4-ft. centers, serve to prevent movement of the pieces mak-

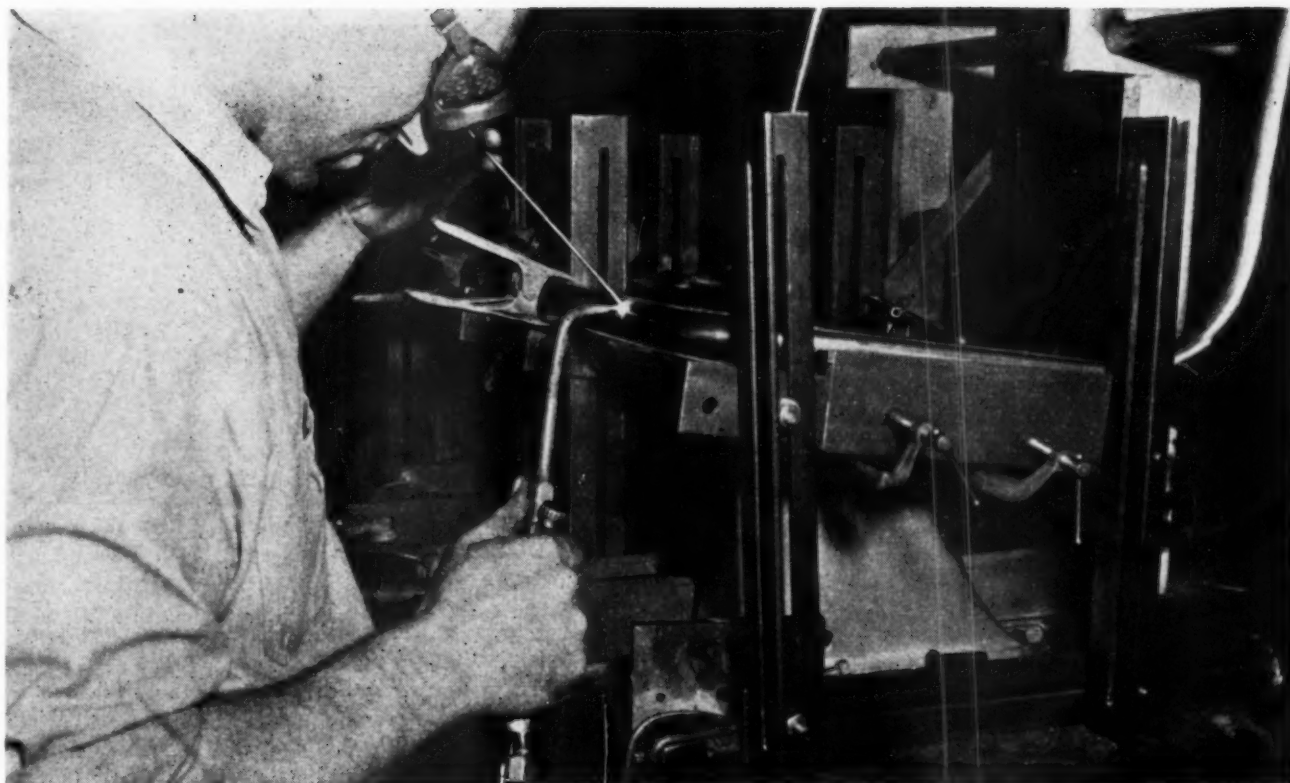
ing up each duct section and preserve their alignment.

Drive cleats at the sides of each duct facilitate erection. The ductwork is erected with the workmen on scaffolds, each crew consisting of the normal three men.

All of the ductwork is fabricated in the Mannen & Roth Company shop in Cleveland and delivered to Akron by truck two or three times a week.



The photo shows large and small ducts in the Polsky store. The drawing above shows the standing seam "S" clips used on top and bottom with drive clips on the sides. With standing seam clips at 8-foot intervals and stiffening angles in between plus the four longitudinal standing seams there is sufficient rigidity to permit customary erecting methods.



Jigging for Better Welds* (Part II)

This is the second article on the subject of the use of jigs in welding. The problem of welding can be greatly simplified by the application of jigs to jobs that are repetitious. Welding to closer tolerances is made possible and the operation takes less time to perform.

BETWEEN the simple shop accessories and the more complicated work-holding devices there is no sharply defined line. Special-purpose jigs, like those shown in the accompanying illustrations generally amount to no more than elaborate developments and combinations of the simple jigging devices already described. They can, however, be broadly classified as tack-welding jigs or jigs in which the work is held until finished.

Sometimes the assembly of a welded structure may be so complex that the jig required would not give the operator convenient access to all parts of the joints. When this is the case, a more simple jig can be used to hold the parts for tack-welding only. Final welding can then be handled with a second jig; or welding of the tack-welded parts may be completed

without a jig, provided proper allowances have been made for distortion beforehand. Many repair jobs are done by the latter method. However, the majority of jigs for production operations, and many jigs for repair operations as well, are designed primarily to eliminate tack-welding and reduce handling time. Interruptions caused by melting out tack-welds are thus avoided, and serious stress problems created by tack-welds in some of the non-ferrous metals are also eliminated. Jigs, in which the parts are assembled and held until welding is complete, may be classified as stationary, freely movable, semi-automatic, or automatic.

When the jig design makes it necessary for the operator to move about the work, the jig is termed "stationary." This type of jig is commonly used in repair operations or in connection with large work.

*Reprinted from Linde Tips.

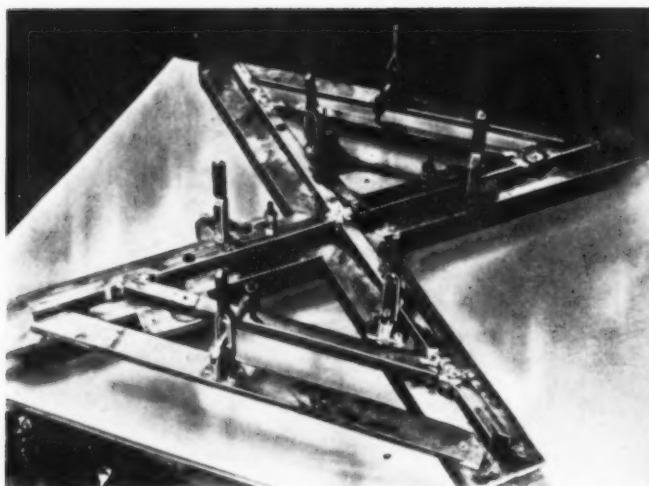


Fig. 1—On the left a toggle clamp jig holds cross bracing subassemblies of square tubing for brazing while the operator on the right is welding magnesium screen frames.

Clamping arrangements usually fasten the work to the jig or hold the work firmly in place by clamping members of the jig together.

Ability to move the jig at will is a great convenience to the welding operator. Jigs, arranged so that the work can be locked tight and rotated during welding, represent the movable or swinging type. With them, assemblies can be kept continuously before the operator in the handiest welding position. Supporting rollers, used while welding circumferential seams in round tanks or containers, are a common example. Jigs for holding metal door frames and sash are frequently mounted centrally on a turntable to permit working on all corners from a single welding position.

Semi-automatic jigs are equipped with added mechanisms that make it possible for the operator to move the work without interrupting the welding. Ratchets, pulleys, cable and counter-weight releases, brakes that regulate the movement of the jig, indexing devices, and simple levers are all used to good advantage. Semi-automatic jigs are generally hand- or foot-

operated by the welder, but some of the more complicated ones require a helper.

Automatic jigs are particularly valuable for manufacturing relatively small parts in large quantities. They are usually motor-driven so that movement of the jig places the point to be welded constantly before the operator. When completely mechanized, one or more stationary blowpipes are mounted so that the operator does little more than load and unload the jig. Speed of movement can be uniform, variable, or intermittent, and is arranged to suit the job at hand.

Design Principles

Special-purpose jigs, whether for repair or production work, must cover a variety of needs and special conditions. To be efficient, they must also measure up to certain requirements.

Simplicity. The design of jigs should always be as simple as possible. Jigs should operate smoothly and quickly to facilitate loading and unloading, although this as a factor that is more important to production than repair work. In planning, remember that jigs are usually loaded cold and unloaded while both work and jig are hot. Normally, more of this heat and consequent expansion will be in the welded assembly. Unless proper allowance has been made, the work may bind.

Rigidity. The body of a jig must be stiff and rugged to withstand stresses that develop during operation and tend to spring both jig and work out of line. The jig must hold the work in correct alignment until welding is completed.

Rapid Action. All clamps should operate easily and rapidly. They should be positioned away from the welding flame so that they will not overheat. To avoid loss, they should be made integral parts of the jigs but they should also be so located that they will afford clearance for easy loading and unloading when disengaged.

Accuracy. Care should be taken to place locating points so that parts to be welded can be positioned accurately with minimum adjustment by the operator. Accuracy in the finished work will depend upon this.

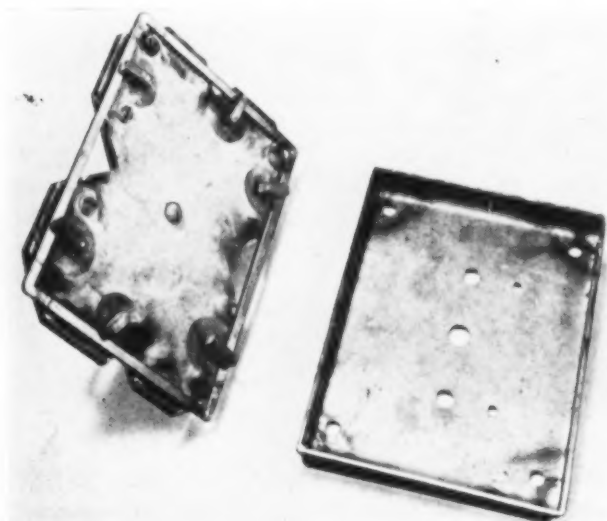


Fig. 2—The jig on the left is used for welding a small frame inside the recessed cover on the right.

Locating points usually consist of pads, bosses, lugs, pins, studs, V-blocks, stationary or movable screws, cup and cone arrangements, and finished holes, corners, and edges. They may be cast solid with the jig body, permanently fixed to it, or adjustable. Adjustable locating points are often desirable from the standpoint of flexibility. Whatever their nature, all locating points must be firm and rigid so that they will not be forced out of alignment as the work is clamped or when the work is heated during welding. Gages, stops, pinions, mandrels, and the body of the jig usually can be so arranged that the jig will not close if parts are placed in the jig in incorrect positions.

Accessibility. The jig itself should be so designed and all protruding parts so located that joints to be welded will be easily accessible. Unnecessary bulkiness, that will restrict blowpipe manipulation or force the operator to work in a cramped position, must be avoided. Methods that give required bulk in clamping jaws and at the same time allow free access to joints were shown in the previous article. Clamping or locking arrangements that would ordinarily reach across the line of weld may be offset so that they will not interfere with the operator.

Construction

The size and weight of the article to be welded determines what type of construction is required for the body of the jig. Box-like jigs, which wholly or partly enclose the work, are often made of iron or steel castings. Such construction offers a firm base for the clamps. However, jig bodies can be fabricated from plate, bars, shapes, strips, rails, or combinations of these with iron or steel castings. Often it is both profitable and economical to use old materials.

Whether the jig is made of new or old metal, oxy-acetylene welding and cutting will prove invaluable in its fabrication by eliminating expensive special castings and machined parts. Moreover, its strength and lack of bulk make the welded joint particularly suitable for the special design and construction that jigs normally require.

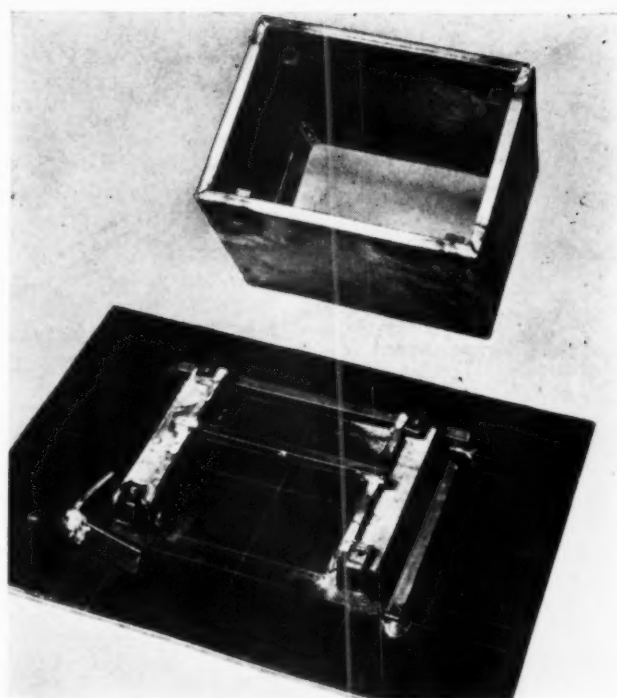


Fig. 3—The H-shaped member of this fixture holds lugs in position for welding inside the rectangular shell in the background.

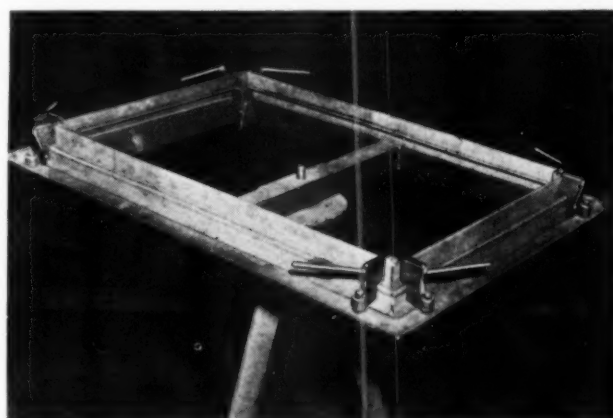


Fig. 4—This movable jig for welding metal window sash allows the operator to weld all four corners without moving around the work.

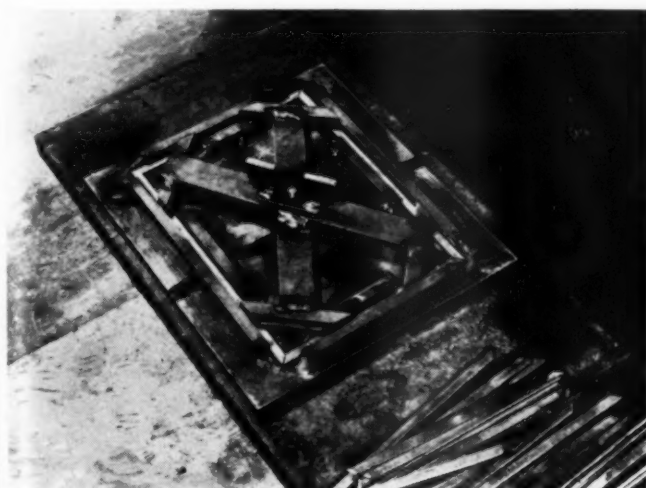
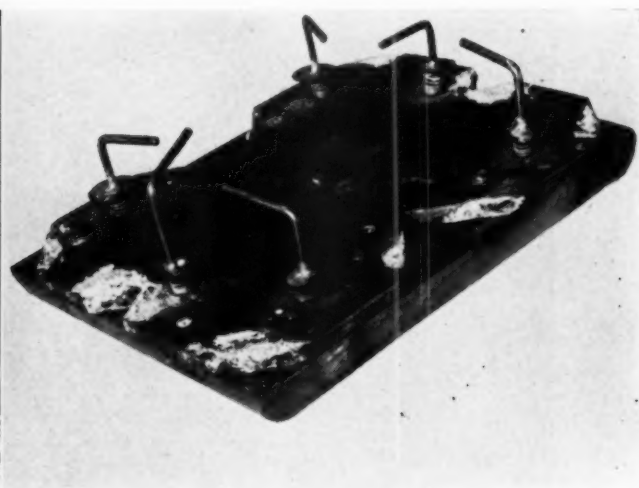
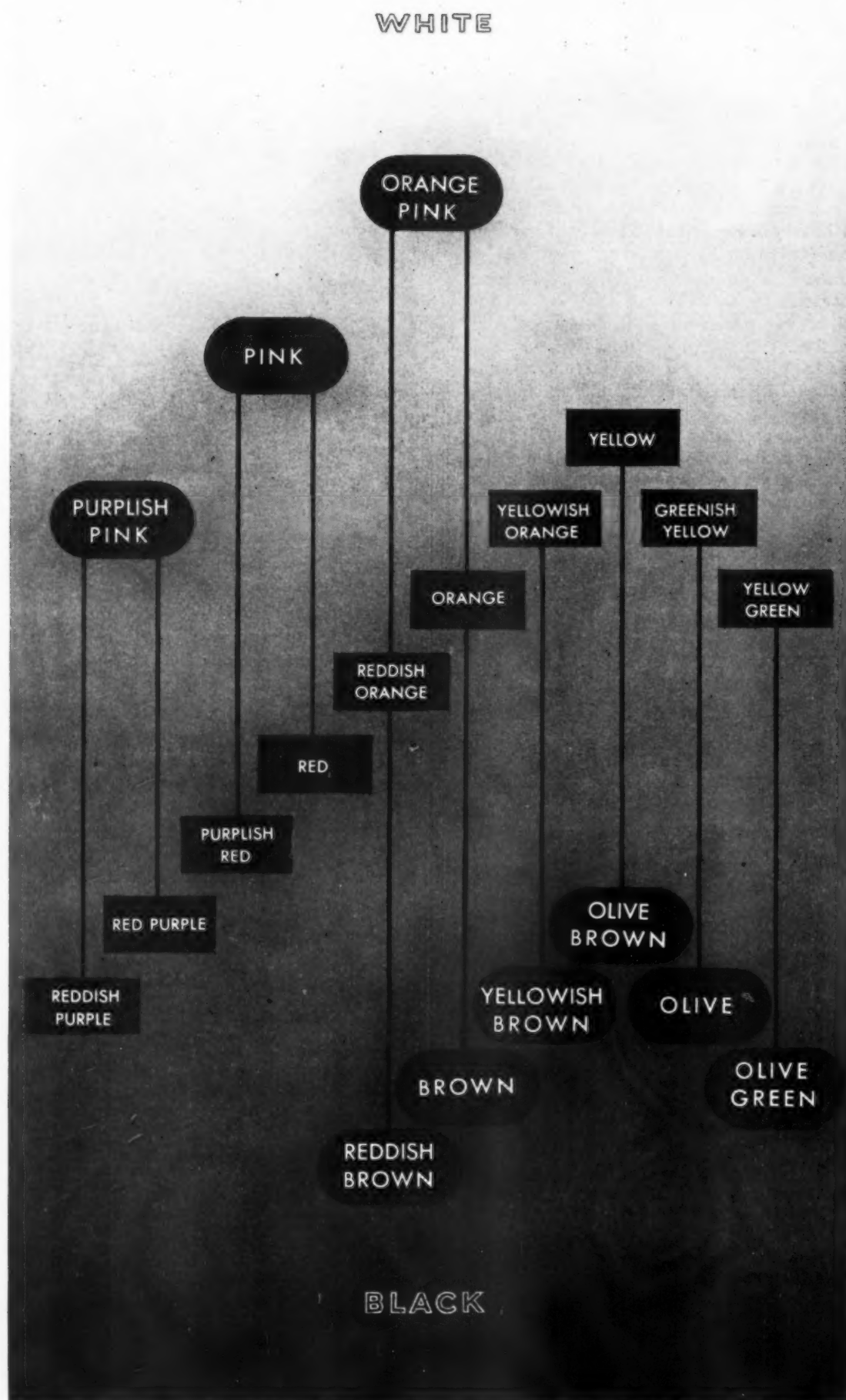


Fig. 5—Bar stock welded to a base plate position the small frame members on the left. The spring loaded handles on the right actuate the dogs shown on the jig in Fig. 2.





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Color Mixing and Matching

By Stanley T. Dingman

The chart on the facing page is a graphic illustration of the change in tints or shading that is produced by a variation in the quantity of pigments used in mixing paint. Between the extremes of black and white all the various shades are a result of adding or subtracting amounts of the basic colors that are needed to produce tints.

COLOR mixing and matching are everyday problems met by anyone having to do with the finishing of materials either in the shop or in the field. But despite the regularity with which the problems arise, color continues to be a mystery. Or if not a mystery, at least a matter of personal opinion as any man who has said his wife's chartreuse hat was yellow knows. As a matter of fact, the names used to designate certain identical colors may be quite dissimilar, depending upon the experience of the individual. For instance, the color ivory sometimes is referred to as Massicot yellow, polar bear, or weak greenish yellow. And, strangely enough, the name ivory also is applied to still another color that is variously known as cream, Leghorn, or weak yellow.

Color Fundamentals

There have been discovered, however, certain fundamentals of color which can be applied to all finishing operations, thus enabling the finisher to obtain the desired results. Basically, color perception is dependent upon the amount and kind of light reflected from a surface. A surface which reflects approximately all of the light striking it produces the color called white, and a surface which reflects practically none of the light produces the effect known as black. Between these extremes is the whole gamut of colors, hues, and shades, many of which have defied any attempts to standardize color nomenclature because of their almost imperceptible differences.

Technically, neither black nor white are colors. True black, or, rather the perception of true black, is caused by an absence of all color, and the conception of pure white is caused by the presence of all colors. To the practical man who has mixed several pigments together and produced a dark, muddy-black color, this statement may seem paradoxical. In reality, however, what he has done is to combine materials, each of which has different light-absorbing qualities, thus reducing the amount and kind of light reflected by the final mixture. This correlation between light and color is made evident by studying natural sunlight through a spectro-

scope. Passing through the prism, the light, which had appeared white to the eye, is arranged in an orderly series of wave lengths that give rise to visible perceptions of color, ranging from red to violet.

Note that when all of these light waves were permitted to strike the eye in the random arrangement of natural sunlight, the resulting color perception was white. Neither in the random arrangement of natural light, nor in the orderly spectrographic arrangement is there any black. Therefore, it must be concluded that the perception of black is caused by a total lack of color or light reflectance.

Light-reflectance = Color

Much of this may seem utter nonsense, but it is only when color is understood to be a direct result of light reflectance that the various problems of color mixing and matching can be solved on a practical basis. For instance, there has been, of late, an increasing tendency to finish mill and factory interiors in white so as to provide workers with a higher level of illumination, thus increasing their efficiency and upping their morale. Actually, what has been done is to finish the walls and ceilings with a material that has a high light-reflectance and thus appears to be white. From this it can be seen that various experiments set up to prove white finishes as the most efficient from a viewpoint of lighting efficiency are not actually necessary for if such materials did not reflect a high percentage of the light striking them they would not be white.

Such experiments, however, have had inestimable value for the practical finisher who confines his thoughts to the securing of a desired color from the mixing of available pigmenting materials. It may some day come to pass that pigments, instead of being listed as white, yellow, green, red, or blue, will be listed by number according to the wave lengths of light they absorb or reflect.

Problem of Nomenclature

As the variations in color conception can, and do, lead to confusion, serious attempts have been made to



A . . . The man above is comparing a color sample to the original that he is attempting to match.

set up certain standards by which the finisher can guide himself in the mixing and matching of colors. Unfortunately, there is no universally adopted system that refers a specific name to a specific color. Also, there is no positive agreement as to the actual number of different color variations. There have been several color systems set up in attempts to put some order into the confusion that exists in color terminology, but none of these, as yet, has been universally accepted.

Underlying the difficulty in color measurement and terminology is the fact that in the visible spectrum there are no positive or sharply defined differences between adjacent color tones. This is because color differentiation is based upon the frequency with which light rays strike the eye. The visible spectrum covers a range of wave lengths from about 3,800 to 8,000 Angstrom units; the shorter, or violet waves striking the eye with much greater frequency than the longest, or red, waves. Each increase in wave length over this range produces a different color perception, but since these light rays are striking the eye at frequencies approximating 800 trillions per second, the eye just is not quick enough to discriminate between minor differences in wave length.

What the color systems so far devised have attempted to do, therefore, is to divide the visible spectrum into arbitrary sections of broad enough range so that the eye can discriminate between them. Once these arbi-

trary sections have been set up, certain designations are given to each for purposes of identification and specification. The actual lack of universal acceptance of any one such system, however, can be seen from the fact that in its commercial standards the National Bureau of Standards refers each of its standards for color to several different systems.

Production of Tints

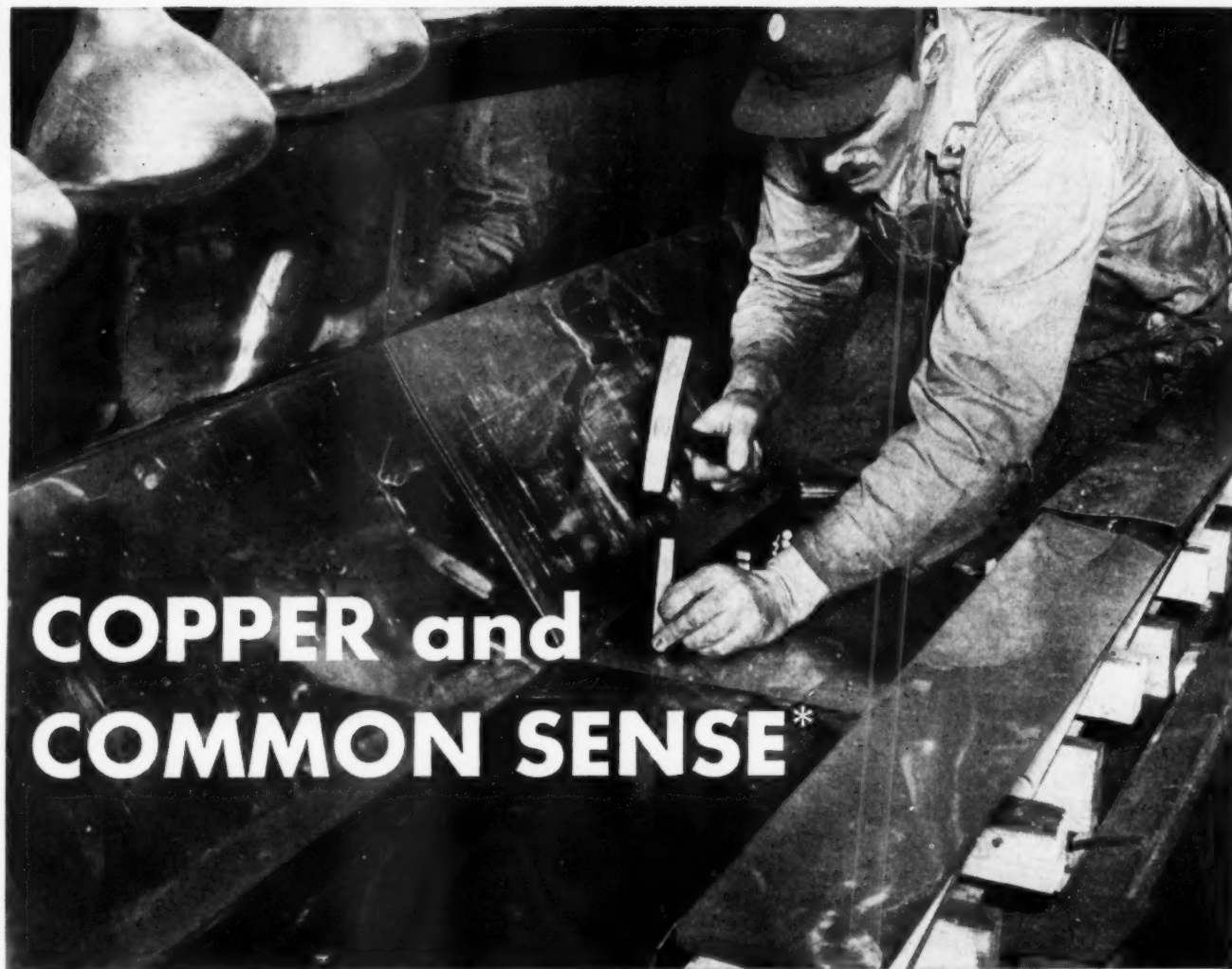
Getting down to the more practical phases of color mixing and matching, the three primary colors, as everyone knows, are red, blue, and yellow. Theoretically, by mixing these in varying amounts, any other hue or tint can be produced. In practice, however, it is necessary to use judgment in deciding just which pigments should be used to produce the desired result. For instance, red and yellow are supposed to produce orange, but if a bright, pure orange rather than a dull one is desired, the finisher should choose red and yellow pigments which themselves approach orange. Thus, orange chrome, English vermillion, or scarlet when mixed with Naples yellow, medium cadmium or medium chrome will give the bright orange. Should the red pigments be on the violet side, such as crimson, magenta, or geranium, and the yellows be of a somewhat green tint, the resulting orange will be grayish or muddy.

On the other hand, if a pure, clear violet is wanted, the last mentioned red pigments should be mixed with blues such as cobalt, monastral, or ultramarine which

(Continued on page 160)

B . . . Below is shown a pneumatically powered paint mixer and the way that it can operate right in the barrel.





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Indexed handles, renewable seats . . . Simple construction makes this swing spout a sales value unparalleled. Cast brass, polished chrome finish.

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Simplified water flow ducts . . . with excess parts eliminated. . . Short, easy valve action. Longer lasting rubber bumpers.

203 This is the same mechanism as 202 F. but comes in combination for use vertical or horizontal.

299 Glass Filler Station
Another combination with the simplified mechanism of the Fisher Glass Filler. The Drip pan is Permite, acid resisting, lighter than aluminum. Has highly polished lustre.

306-306 C Sink waste socket and standpipe is precision machined to insure leak-proof fit. Finished in plain brass or polished chrome.

ALSO SINK STOPPERS—DIPPER WELL OUTLETS—SINK WASTE SOCKETS—OVERFLOW BUSHINGS—TANK FLANGES—POT HOOKS—GOOSENECK RISERS—MONITOR BURNERS—AND OTHER ITEMS.

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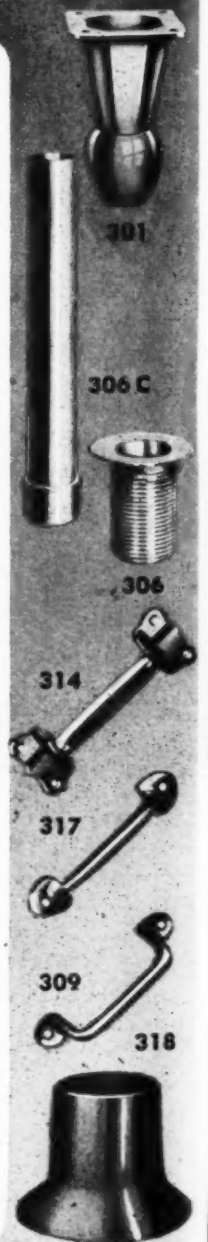
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318 Bell Shaped Foot for use with adjustable leg Styling for practical fixtures of simplified design.

315 Two-way Draft Arm Station to standard measurements — all visible parts polished chrome.

The Carolinas' Annual



Officers of the Carolinas association—Left to right: W. H. Arthur, secretary-treasurer; Horace King, 2nd vice president; Hilton Bowles, president; V. D. Ramseur, Jr., 1st vice president.

THE Myrtle Beach (South Carolina) convention of the Carolinas Roofing and Sheet Metal Contractors Association was held on June 12 and 13, with the largest registration of any of the Carolinas annuals. Seventy-five ladies were registered and attended the opening of the convention, the luncheon on the second day, and made the banquet a real success by their presence.

Humidity—Insulation

The manufacturers' hour and round table discussion brought out that textile plants are using higher and higher humidity and that the setting in of insulation on poor sheathing should be given consideration. The whole group felt that two pieces of felt are not enough seal course to go under this insulation over high humidity. Everyone felt that there should be at least four plies of felt used to protect the insulation from the under side.

The problem of wind pressure was discussed.

Guarantees

On special guarantees the consensus of opinion was that architects and owners should specify and pay for bonded roofs, and where the job is too small or they do not want to pay the bond charges, they should select a roofer in whom they have confidence and accept their two-year guarantee. It was stated that the roofer's guarantee, or the bond, should be only a maintenance guarantee, covering repairs to the roof made necessary by inferior workmanship or materials—or to express it simply, to repair leaks caused by ordinary wear and tear.

The South Carolina Legislative Committee reported on four legislative matters of concern to most contractors.

Federal Social Security Tax

The law requires action by Congress each year to prevent the rate going up from the present one to two or three per cent. Since the reserve as of December 31, 1946, was \$8,149,000,000 and the total benefits paid in 1946 were only \$378,100,000, no increase is justifiable and when the question comes up again next year, contractors should write their Congressmen, expressing their opinion.

Unemployment Compensation Law

Two beneficial amendments to the South Carolina Unemployment Compensation Law were passed by the recent legislature and are now in effect.

The minimum rate of contributions has been 0.9 per cent of the payroll, which was earned when paid-in reserve (less benefits paid from your account) divided by average annual payroll, resulted in a ratio of 10

per cent or higher. A new contribution rate of 0.7 per cent has been established for firms whose ratio, as figured above, is 11 to 12 per cent; and the lowest rate is now 0.5 per cent for firms with a ratio of more than 12 per cent.

The second beneficial amendment concerns the payments of benefits to a man who has been discharged for cause or has left the contractor's employ voluntarily, or who has worked for a non-labile employer after leaving a liable contractor's employ. These benefits will now be charged to the general reserve instead of to the contractor's reserve.

Workmen's Compensation Law

There is no prospect of relief in the near future from the high compensation rates now being charged. South Carolina rates running around 7 to 10 per cent are from 50 to 100 per cent higher than those of neighboring states, but even so, the insurance companies claim their South Carolina business is not profitable, and they are pressing for still higher rates. Disfigurement and punitive awards in South Carolina are apparently considerably higher than in other states, most of which limit disfigurement claims to facial disfigurement only.

It has been suggested that the five-man commission to administer this law be chosen by careful selection, with at least two members having a background enabling them to judge cases from an industrial standpoint, two from a labor standpoint, and one from an impartial standpoint.

A further measure which might help to eliminate political considerations in administering the law and effecting desirable amendments would be to prohibit any member of the legislature from representing a client before the Compensation Commission.

Improvement in this law is apparently going to require a steady effort which we can support by making our views known to the Governor and state Representatives and Senators and by supporting such enterprises as Organized Business, which are constantly fighting these battles for better state government.

Labor Relations

The Rivers anti-closed shop bill and the Cantwell anti-check off bill both made some progress in the recent legislature, and both remain on the schedule to be taken up early in the next session.

The federal Taft-Hartley bill contains various measures, but probably the two basic principles are an effort to make labor responsible for its contractual obligations and for its other acts in the same way that management is responsible; and to reduce the monopolistic stranglehold of labor on the nation's economy.

New Business in Stainless Steel

Robert M. Nelson, Marketing Service Department, Market Development Division, The American Rolling Mill Company, talking on "New Business in Stainless Steel for the Sheet Metal Contractor," quoted figures on production and capacity for sheet steel and predicted that the expansion program originally scheduled for competition in 1947 will not be completed until

Officers—1947-1948

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2nd Vice President—Horace King, Wilmington, N. C.
Secy.-Treas.—W. H. Arthur, Jr., Asheville, N. C.

we are well into 1948. He announced that Armco technicians have developed new equipment to hot-dip galvanized sheet steel in coil form for greater production and a superior product both in uniformity and coating adherence.

Mr. Nelson reported many electric furnaces built during the war are now available for peacetime production of stainless and alloy steels and suggested that this capacity be converted into finished products: food serving and handling equipment; storefronts, sign work, marquees, etc.

The National Association

Clarence J. Meyer, national secretary, came a long way and made a fine address on the history, past achievements and future of the Sheet Metal Contractors' National Association.

A committee was appointed at the convention to consider membership in the Sheet Metal Contractors' National Association and recommended that the token membership be held, paying \$10 per member dues—the \$10 to be deducted as a member takes membership in the national association. This requires an increase in membership dues in the Carolinas association to \$35 a year, beginning next year, which means a little over

NWAH&ACA Annual

THE 34th annual convention of the National Warm Air Heating and Air Conditioning Association will be held at the Hotel Cleveland, Cleveland, Ohio, on Thursday and Friday, December 4 and 5, 1947.

President Frank E. Mehrings has appointed the following Program Committee: Gene Brown (Chairman), M. I. Levy, H. L. Orton, I. L. Seith, H. S. Sharp, and E. P. Hayes.—George Boeddener, Managing Director.

Fox Valley Field Day

JULY 15th was the date chosen for the 13th annual Field Day of the Fox Valley Furnace and Sheet Metal Contractors' Association and the scene selected was the beautiful St. Andrew's Country Club.

Feature attraction of the day, beside the golf and horseshoe pitching contest, was the appearance of most of the officers of the Illinois State association. These men made a lengthy journey to present and lend support to the activities of the local association and a

10 cents a day to the bread and butter club. The resolution was adopted unanimously.

Fred W. Boynton of Reynolds Metals Company, explained that aluminum, like other metals was made in a number of different types, some hard and some soft. He advised that contractors tell suppliers what the aluminum was to be used for, to get the proper material needed.

I. E. Anderson of Revere Copper and Brass, Inc., presented information on copper use and a moving picture showing laboratory tests made on 16 oz. copper gutter lining—with heat turned on the gutter and then cold water, then heat and cold water again, so the audience could see the buckles develop. Then the copper gutter lining was set up as found proper to give satisfactory results.

Edwin A. Scott, Editor of *Sheet Metal Worker* gave some information on why contractors should know costs.

The Heating Forum

Dan Lynch of Lennox Furnace Company conducted a heating forum.

Welding

C. William Pfeil of the Universal Welding Corporation gave a talk on welding and showed a moving picture illustrating how simply welding can be done.

The Lighter Side

Joe Hamilton of Johns-Manville and his entertainment committee gave some good laughs. Toastmaster Leiter put on a question-and-answer stunt for the benefit of the ladies. Professor Alli Bendo (Charlie Graham, the new associate president) was brought from Bombay, India, to display an unusual mind reading act.

A sudden rain prevented dancing on the patio, but the party moved into the ballroom and the orchestra played until one o'clock. The Chaplin dance team gave three exhibition dance numbers.

The tentative dates for the meeting next year are June 11 and 12, 1948, at Myrtle Beach. This is Friday and Saturday which means that the members can arrive on Thursday and stay over Sunday if they wish.

great deal of praise came their way for this act.

George Bushman was chairman of the affair and did a very capable job of handling all arrangements, though Jack Stowell found it hard to overcome the habit of years (when he had been chairman) and made the awards of the prizes. He also explained the way in which the association had stacked the cards in the horseshoe contest by arranging for two previous winners (salesmen!) to get lost. Then after all the elaborate preparations, Joe Walters of the state association crossed them up and won the event. President Walter Dennis of the Illinois association also won a door prize.

Obituary

I. B. Brown, engineer with Republic Metals, Inc., 4040 W. Lake St., Chicago, died in June, with funeral services in LaGrange, Illinois, and burial in Cedar Falls, Iowa.

Mr. Brown started work in the tin shop, then served with the wholesale industry and for years worked for Republic Metals. During the war years he joined the War Production board in the Chicago area, co-ordinating production efforts in the midwest area.

ASSOCIATION ACTIVITIES



Rochester, N. Y.

The Master Sheet Metal, Furnace and Roofers' Association of Rochester, N. Y., sponsored a trip on July 16 on a car ferry with a stopover at Cobourg, Ontario (across Lake Ontario), where a ball game was played



between the merchandisers and the contractors. Both dinner and supper were served on the boat and refreshments were available at all times.

Approximately one hundred contractors and merchandisers made this trip, among them Joe Stiglmeier, State association president, and Secretary Clarence J. Meyer of the State and National associations. Other guests were from Buffalo and Lockport.

Richard W. Friday, Secretary.

Detroit

PRESIDENT Marshall Vanassche opened the regular monthly meeting of the Detroit Association of Warm Air Heating & Air Conditioning Contractors, held at Fort Shelby on July 10.

Treasurer Bob Look's report indicated that the association was in good shape financially.

The secretary reported regarding the wage increase, which now makes the standard scale \$2.025 per hour, until April 1st, 1948.

The steel situation was reported as not very good, but there should be a definite increase inasmuch as there is now twenty per cent more capacity and production than heretofore. While certain kinds of steel are more available, galvanized sheets are a long way behind schedule.

The fuel oil question popped up again, but local newspaper announcements should slightly cheer those who sell oil heating equipment.

There was considerable discussion regarding the employees' insurance which is part of the last labor agreement. It was agreed to set up a trusteeship from both labor and contractors to iron out this subject. Bob Clark was elected as trustee for the Detroit association and Marshall Vanassche was to be the alternate member.

The secretary made some comments on the school for apprentices which has been going for some time. Otto Schultz is now chairman of the apprentice school committee. The industry still needs good mechanics.

Following a few more incidental discussions, the meeting adjourned and the various groups enjoyed cards and refreshments furnished by the Minneapolis-

Honeywell company, with Jim Neil presiding.

W. O. Smith

Ernie Parsons has been putting in a bad time at the hospital, but is now recuperating.

Condolences were offered Tom Ginley, president of the Detroit Safety Furnace Pipe Company, in the loss of his son.

Secretary and Mrs. Jay Biddle are spending a one-week vacation at Isle Royal, Michigan.

Indoor Comfort Conferences

UP to July first, the National Warm Air Heating and Air Conditioning Association held 27 conferences with a total attendance of 2,634 students. These conferences were held from Boston to Omaha and from Atlanta to Chicago.

All of the conferences were conducted by Guy A. Voorhees, Application Engineering Director of the Association, whose extensive background of practical experience in all phases of the warm air heating was an outstanding factor in the success of the program.

The material covered in the conference program includes a discussion of the basic principles of heating; practical rules for the designing, installing and servicing of both gravity and winter air conditioning, warm air heating systems. The material presented is of a very practical nature, rather than in a highly technical form. The instruction is based on codes and manuals developed by the association as a result of nearly thirty years of research in heating carried on in cooperation with the University of Illinois. Each man attending is furnished a complete set of manuals and a set of floor plans used in working out actual problems in the class sessions.

The association is now making arrangements for 1948 conference programs. 1948 conferences may be 3-day instead of 2-day, allowing about half a day for the instruction of beginners in heating fundamentals.

Manual No. 9 (for installations of 120,000 Btu. per hour and over) and Manual 7-A (for warm air ceiling panel installations) are being developed by the Installation Codes Committee of the association and are to be included in the 1948 instruction. With the addition of these two new manuals, instruction will be given those attending the conferences in the proper method of design and installation of residential gravity warm air heating systems; residential warm air winter air conditioning systems; warm air winter air conditioning systems in commercial and other large buildings; and panel heating systems using warm air ceiling panels.

Groups interested in a warm air engineering school should write George Boeddener, Managing Director, 145 Public Square, Cleveland 14. Travel time involved from one city to another is often difficult to arrange.

A nominal tuition fee is charged to partially defray the cost; the balance of the school operation expense is borne by the National association.

Equipment Developments

For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 128 and mail to us.

△ Indicates manufacturer not listed in 1947 Directory.

• Indicates type of product not listed in 1947 Directory.

● 97—Duct Furnace

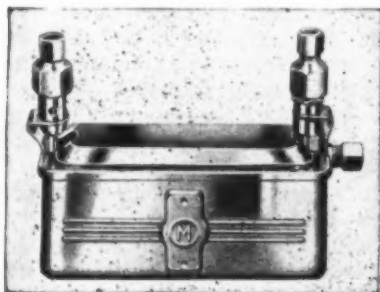
A new principle of controlled heat, referred to as duo stage temperature modulation, has been inaugurated within the three largest



models of Naco's new duct furnace. This feature automatically reduces total heat delivery with undiminished air delivery. All models are AGA approved. — *Pacific Heater Div., Naco Manufacturing Co., 7631 Roseberry Ave., Huntington Park, Calif.*

98—Atomick Humidifier

The Atomick humidifier is a simple, inexpensive device for adding humidity to indoor atmospheres, designed for industries where year-around maintenance of proper humidity is vital. It is air operated.



Where a compressed air line is not available, a small compressor may be employed. The single spray Atomick will atomize up to 1 1/4 gallons of water per hour, while the 4-spray unit will handle four times as much.

In hot dry climates, the units can be used for cooling purposes.—*Maid-O-Mist, Inc., 3218 N. Pulaski Rd., Chicago 41.*

△ 99—Floor Furnace

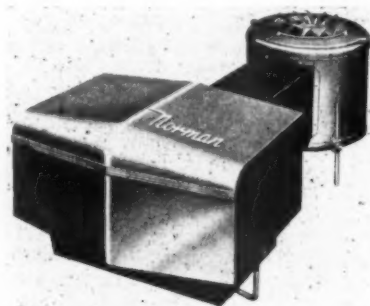
An oil floor furnace is offered with an operating range of from 35,000 to 75,000 Btu per hour through adjustments of the 2-piece pressurized cast iron burner burning kerosene, No. 1, 2 or 3 fuel oil.

The burner assembly consists of oil control, fan and electrical connections mounted on one panel.

The Calimode requires a 20 by 30-in. grille opening and is 28 3/4 in. overall in depth.—*Calimode, Inc., Atlanta, Georgia.*

● 100—Oil Burner

A new vaporizing type oil conversion burner has been added to the Norman line. Four improved principles are incorporated—it vaporizes oil fast and completely; the double shell burner automatically mixes primary air in divided streams at point of combustion; the patented rotor plate with slanting fan-like blades breaks up the flame



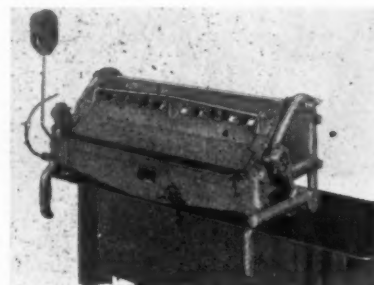
into a series of shorter, wider, swirling flames to produce a concentrated distribution of heat to the sides of the combustion chamber.

This new burner is fully automatic and is adjustable up to a maximum capacity of 1 gallon per hour. The continuous operating, two-speed, low wattage blower assures positive combustion.

The burner is approved by the Underwriters' Laboratories, Inc. It has been tested and rated according to the standards of the Institute of Heating and Cooking Appliance Manufacturers.—*Norman Products Company, 1150 Chesapeake Ave., Columbus 12, Ohio.*

● 101—Bender

A new Steward box and pan bender—bench type—is suitable for sheet metal specialty shop as well as for light production. The fingers are made of steel for maximum



strength and light weight. Adjustment of fingers is easily done.

Overall bending length is 24 inches; capacity, 1-in. bend on 24-inch length, 20 gauge; height, head open, 5/8 inch; back gauge range, 1/2 to 9 1/4-in.; depth of fingers, 2 1/2 in.; net weight 120 lbs. Standard equipment includes a full set of fingers, consisting of seven fingers (2 each 2-in., 2 each 3 1/2-inch; 1 each 3, 4 and 6 in.); gauge table with gauging bar and apron stop gauge.—*Ward Machinery Company, 562 W. Washington Blvd., Chicago 6.*

● 102—Toggle Clamp

A new portable toggle clamp—Model 464 plier clamp—has been designed for sheet metal work and other operations necessitating quick, positive pressure on light gauge materials up to 3/8 in. thick-



ness. Toggle lock action holds parts in position for drilling, riveting, welding, gluing on sheet metal ducts, housings, cabinets, etc.

The tool is forged and may be revamped for special application. The nose is narrow and hardened steel bushings are replaceable.—*Detroit Stamping Co., Dept. K, 341 Midland Ave., Detroit 3.*

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BENTON HARBOR, MICHIGAN

REGAL PRODUCTS CO.
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SCHWAB SAFE COMPANY
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SUN-FIRE STOKER CORP.
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TENNESSEE STOVE WORKS
CHATTANOOGA, TENNESSEE

TIMKEN SILENT AUTOMATIC DIV.
TIMKEN DETROIT AXLE CO.

JACKSON, MICHIGAN

UNION STEEL PRODUCTS CO.
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THE WATERMAN-WATERBURY CO.
MINNEAPOLIS, MINNESOTA

WISCONSIN OIL BURNER CO.
MADISON, WISCONSIN

The "Best for the Finest"

Field Draft Controls—"The Best for The Finest" coal, oil,
and gas fired Furnaces and Boilers; Winter air-
conditioners; Space heaters; Stoves; Ranges; Water heaters.

The National
Warm Air Heating
and Air Conditioning
Association
recommends a good
barometric draft
control.



FIELD CONTROL DIVISION

H. D. CONKEY & COMPANY • MENDOTA, ILLINOIS

Equipment Developments.....

For your convenience in obtaining information regarding these items, use the coupon on page 128.

△ 103—Pillow Block

In addition to an unusual capillary system developed for the Ideal bearing, the oil reservoir occupies approximately half of the space oc-

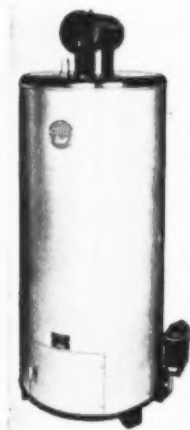


cupied by the pillow block. The capillary system minutely meters oil through the porous bronze bushing only when needed.

The bearing is shipped fully oiled. Self-alignment is assured by the ball and socket joint between the bearing body and base. The one mounting bolt, locked between double shells, provides direct anchorage. Available in 1/2 through 1-inch shaft sizes.—*Ideal Products Company, 71 Lake Drive, Oshkosh, Wis.*

104—Water Heater

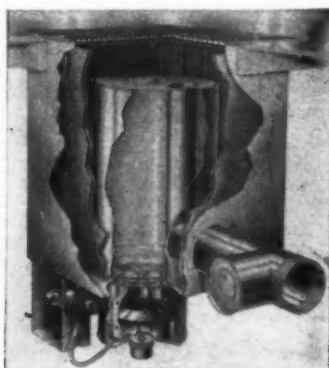
A new, modern oil-fired water heater has been developed, and is available in two models—the WG-3 and the WH-5—with tank capacities of 25 and 45 gallons. Tank is of heavy gauge steel one-piece construction, welded and heavily galvanized.



The heater is equipped with the Field barometric draft control; has a beautifully styled cabinet pressed and rolled of copper bearing steel; bonderized with silver grey hammerloid finish and contrasting black trim.—*Conco Engineering Works, Mendota, Illinois.*

△ 105—Norwesco Furnace

Model FL46 Even-Temp floor furnace has been designed to heat the average 5-room house and is thermostatically controlled. There is a thermal safety shut-off control which prevents overheating. The

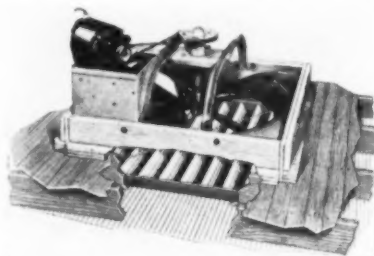


unit is approved by Underwriters' Laboratories.

The burner pot can be serviced by the removal of four screws.—*No-thwex Metal Products, Inc., 55 Spokane Street, Seattle 4, Wash.*

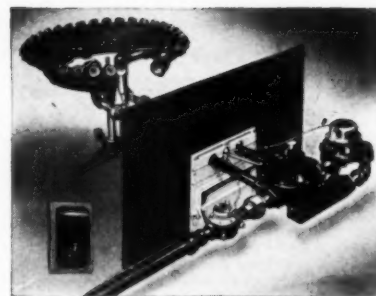
106—Attic Fan

A new Silent Breeze "H.M." ventilating fan package has been designed for homes having as little as 24 inches clearance between attic floor and roof; furnished with fans 24, 30 and 36-inch diameter. The unit, less time switch and ceiling shutter, is assembled at the fac-



tory. Installation requires only the cutting and framing of a suitable opening in the attic floor, installing the shutter, placing the fan unit in position, wiring and providing outlet louver area.

The unit includes a Silent Breeze ventilating fan, suction chamber, automatic ceiling shutter and motor. A 24-hour time switch for automatic control is available.—*Holcomb & Hoke Mfg. Co., Inc., 1545 Van Buren St., Indianapolis 7, Ind.*



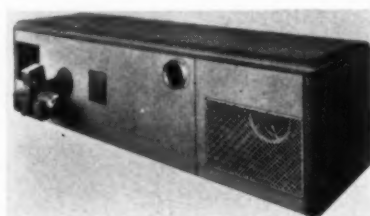
△ 107—Conversion Burner

A new type gas conversion unit fits into coal furnaces and burns bottled, natural, mixed or manufactured gas. A new design principle in the Miller-Special—a larger burner diameter with thirty jets incorporated around its outer edge—brings the burner to within two inches from the fire box wall. A room thermostat permits remote control.

The Miller-Special is equipped with safety controls, automatic gas valve, automatic gas regulator, and automatic safety pilot.—*Miller Gas Heating Company, 549 W. Washington Blvd., Chicago 6.*

△ 108—Attic Furnace

A hanging-oil fired unit heater has been developed for warm air heating for commercial and industrial installations, using the counter flow principle of air and heat. A feature of the design is that of moving air at high velocity and low



temperature. Only a minimum amount of duct work is required.

Units are made of 1/8 to 1/4-in. mild steel with stainless being used for baffles and all surfaces where flame impingement might occur. The unit is suspended on steel channels supported by the building wall and rods from trusses or roof. Bonnet ratings are 150,000, 240,000 and 360,000 Btu per hour.

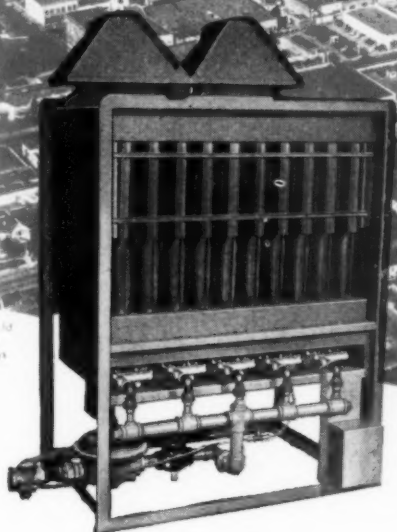
Combustion is secured by Underwriters' approved gun type oil burners. All heaters are equipped with stack relay, combination fan and limit controls, and thermostat.—*Shafco Distributing Corp., Div. of Sawyer Heating Company, 1354 Book Bldg., Detroit 26.*

Watch the Word spread!



Duo Stage MODULATION

...as featured in the
Revolutionary New
Pacific DUCT FURNACE



The most exciting development in Automatic Gas Heating in years! That's the new Pacific Duct Furnace with the unique Duo Stage Modulation.

Ideal for so many types of larger buildings—schools, churches, theatres, residences, stores—the Duct Furnace is a highly efficient component of your heating, ventilating or air conditioning system, to which a still greater flexibility has been added.

By automatic selection of two stages of discharge air temperature, Duo Stage Modulation permits maintenance of constant room tempera-

ture without diminishing warm air circulation or fresh air ventilation.

This new conception of "heat blending" materially reduces stratification, temperature fluctuation and gas consumption. It also assures a wholly new standard of sustained comfort throughout the building being served.

Gas heating authorities everywhere make no bones about it. This new furnace is exciting news! It is the practical, immediate successor to conventional "hot blast" forced air furnaces.

Up and down every street in your town are customers who await the new Pacific Duct Furnace.

PATENT APPLIED FOR
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MORE EXCITING NEWS TO COME

Pacific is the company to watch... other "Front Page News" will soon be announced to the Gas Heating Industry.
34 YEARS IN GAS HEATING EXCLUSIVELY!



NACO MANUFACTURING CO.

PACIFIC HEATER DIVISION

P. O. BOX 310 • HUNTINGTON PARK, CALIFORNIA

Equipment Developments

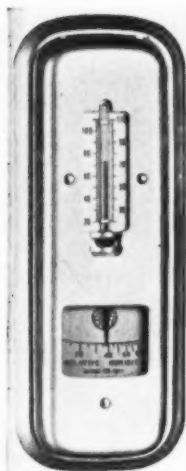
For your convenience in obtaining information regarding these items, use the coupon on page 128.

109—Humidifier

A self-flushing, self-cleaning humidifier is announced. The new unit has a finger-tip control switch that trips to the flushing position, allowing the unit to eliminate all water and residue automatically. The waste overflow can be connected directly to main drain. When completely drained, the unit automatically adjusts itself to starting position.—*Skuttle Manufacturing Company, 517 E. Larned St., Detroit 26.*

110—Indicator

A new wall type relative humidity and temperature indicator with heavy metal mounting plate is in production. Model 182 is sufficiently accurate for industrial as well as domestic use.



Model 182's relative humidity scale with pointer indicates relative humidity directly in percent from 10 to 95 percent and to within 5 percent accuracy. It is actuated by Bendix - Friez multiple hair elements.

Air temperatures are indicated from 20 to 110 deg. F. by a red liquid filled thermometer. Dimensions are $2\frac{5}{8} \times 7 \times 1\frac{1}{2}$ in.—*Friez Instrument Division, Bendix Aviation Corporation, Taylor Avenue and Loch Raven Blvd., Towson, Baltimore 4.*

111—Stainless Electrodes

Airco is now offering a complete line of stainless steel welding electrodes in all grades and diameters. Electrodes are furnished with a heavy extruded lime type coating for D.C. application and all but the straight chrome analyses may be obtained with a lime-titania coating that can be used on either A.C. or D.C.

The lime-titania coating does

away with arc blow and makes the electrodes easier to manipulate.—*Air Reduction Sales Co., 60 East 42nd St., New York 17, N. Y.*

112—Package Filters

Air filters can now be purchased in packages containing two or three filters of the commonly used sizes.

With this new filter packaging method, it is simple for the con-



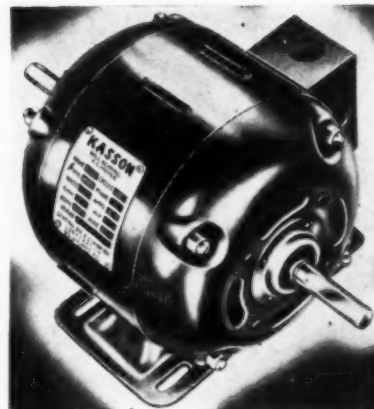
sumer to buy a set of replacements for his furnace. A catalog shows the number and sizes of the filters required, and each package is clearly marked with the number and size contained in the package.

The dealer has an attractive over-the-counter item that is easy to identify, inventory, and the consumer to handle—*Research Products Corporation, 1015 E. Washington Ave., Madison 3, Wis.*

113—Corflor

Permacrete Corflor is a new precast, prestressed steel reinforced, hollow beam type concrete roof and floor unit for simplified residential and industrial construction. Units are $7\frac{3}{4} \times 7\frac{3}{4}$ with a hole 6 inches in diameter running lengthwise of the unit. The air space in the hollow section is a good insulator.

For panel heating, two Corflor units are combined with the use of a return block to make a complete heating circuit using forced warm air.—*Corflor Div., Permacrete Products Corporation, 1839 South Wall St., Columbus, Ohio.*



114—Kasson Rotomotor

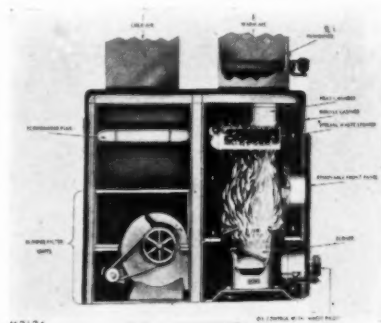
The Kasson rotomotor—an all-steel fabricated fractional hp ball bearing motor is in production.

The Kasson induction motor includes specially designed baffles and louvers in the housing which result in low heat rise. Starting winding is made from glass insulated wire, while the gun-metal oxidation of the starting mechanism before assembly minimizes rust in service. Sealed-for-life bearings are standard equipment.—*General Die & Stamping Co., 262 Mott St., New York 12, N. Y.*

115—Oil Furnaces

A new line of eleven models of fuel oil furnaces, featuring a new heating principle; both gravity and blower type with either manual or thermostatic controls is offered. Capacities: 50,000 to 108,000 Btu.

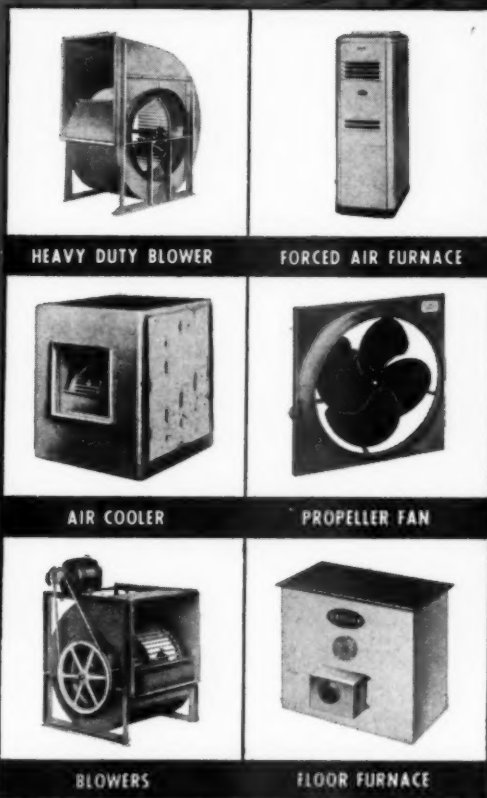
Feature are: The new Comfort Selector; the Heat-Anticipating



thermostat; the quick transfer heat chamber; double casing; special waste stoppers; an economizer flue in the blower compartment; large capacity humidifiers and low voltage controls; oversize blower; heavy-duty insulated blower-filter units with long-life motors; "Magic-Pilot" to meter the oil to the burner; streamlined outer casings in suntan enamel with chrome hardware.—*Duo-Therm Division, Motor Wheel Corporation, Lansing 3, Mich.*

Jackpot...

Utility's line gives every dealer a big payoff... Highly salable modern design... Top performance and long life... Helpful sales and installation material.



Three bells for everyone and no lemons in this line.
Write for complete information and prices.

UTILITY APPLIANCE CORP.

4851 S. Alameda St., Los Angeles 11, California



DIVISIONS

GAFFERS & SATTLER
OCCIDENTAL STOVE CO.

Equipment Developments

For your convenience in obtaining information regarding these items, use the coupon on page 128.

△ 116—Drive It

A new industrial powder-powered tool named "Drive-It," is available, which drives anchor studs as much as three inches into average concrete, punches holes through steel



plate up to $\frac{3}{8}$ in. in thickness and rivets two steel plates together totalling as much as $\frac{3}{4}$ in. in thickness.

The Model 38 "Drive-It," weighing only seven pounds, delivers a twenty-ton blow. This power is derived from a small charge of special powder encased in a small cartridge approximately the size of a 38-caliber pistol shell. A special recoil mechanism absorbs all shock.—*Powder Power Tool Corporation, 618 No. Vancouver Ave., Portland, Ore.*

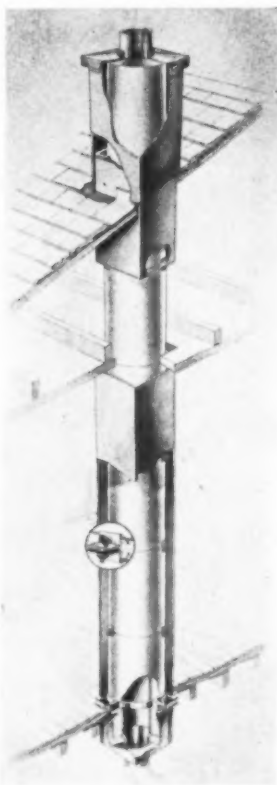
△ 117—A. C. Units

Rogers is now producing self contained air conditioning units in 3 and 5 ton sizes for small commercial installations. These units are compact, requiring less than seven square feet of floor area, and feature a specially designed grille.

The return air can be supplied to either the front or rear of the unit and provision is made for intake of fresh air when needed. Quietness of operation has been engineered into these conditioners and they leave the factory inspected and complete with all controls and internal wiring and piping.—*Rogers Companies, Inc., 1120 Leggett Ave., New York 59, N. Y.*

● 118—Masonry Flue

A new all fuel chimney is offered which can be suspended from the ceiling or floor, made to the house dimensions for easy installation (3 to 4 man hours), and shipped complete with all accessories and instructions. Since it is light enough to be suspended from the floor or ceiling, it is an integral part of the house. When suspended from the ceiling directly over the utility room, it requires no floor space.



The Van-Packer chimney is made with a 7-in. diameter high temperature acid-proof tile lining with a 3-in. wall of lightweight insulating cement, steel reinforced.

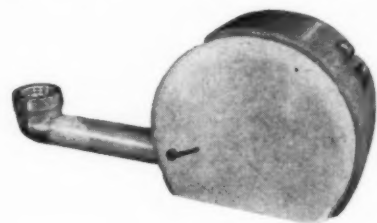
Underwriters' Laboratories tested for extreme firing with coal, oil, gas or wood fuels and approved for one and two-story houses.

The housing above the roof has a design for automatically counter flashing to the roof, and the cap provides attic ventilation, summer and winter.—*Van-Packer Corporation, 135 S. LaSalle Street, Chicago 3.*

119—Stoker Line

A completely re-styled post-war line of domestic, commercial and industrial stokers is being introduced.

The domestic hopper model in 30 and 50-lb. sizes has a two-tone ivory and green finish.

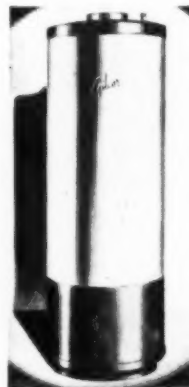


Freeman bin-feed models range from 30 to 750 lbs. per hour capacity, while hopper-type commercial and industrial models range up to 750 lbs. per hour capacity.

An innovation is the Unit-Bilt complete factory assembly—motor, fan, housing, belt drive, transmission, coal tube, retort, etc., assembled as one compact unit. New engineering features include Freeman's new cone gear drive transmission which has only two precision-cut gears; Vari-Speed pulleys; permanent mounted fan and housing; Multi-Flo extra volume air supply; automatic air control with Auto-Vane damper; Breezeway extended windbox surrounding coal tube and retort; Auto-Fuse built-in overload protection.—*Freeman Stoker Division, Illinois, Iron & Bolt Co., 918 S. Michigan Ave., Chicago 5.*

△ 120—Water Heater

A new automatic oil-burning water heater with satin finish aluminum for the cabinet around the tank, combined with a top and base lacquered a rich brown is offered. Recessing the automatic oil control into the base adds to its attractiveness.



Through the use of structural supports rather than extended skirts on the cabinet, the door in the base goes half-way around the heater. The back plate covering the other half can be easily removed. An improved design burner is attached to the base by hook brackets. The cold water inlet is placed at the bottom of the tank.—*Gilcor Products Corporation, Dowagiac, Mich.*

What do you mean...

Two Furnaces in One?



Yessir...that feature of Superfex "round-the-clock" heating gets instant interest from any home owner. It's a simple point to drive home, too. And it's just one of many user-urging points in this greatest selling story in the heating industry.

The answer is...Superfex is two furnaces in one because it provides...

- A.** Peak (high fire) capacity for the coldest weather demand.
- B.** Automatic cut-back to comfortable and economical low fire operation along with corresponding low blower speed for that "in between" mild weather.

Superfex provides all-over comfort *in any weather*. All-over comfort meaning uniform temperature, floor to ceiling, in all rooms. It means warm floors, no cold leg zone. That's "Homogen-Air" heating, and the Homogen-Air idea is exclusive with Superfex

Plus . .

A profit-protected exclusive franchise.[†]
 Sound national advertising support.
 Effective Dealer Help materials.
 Quality and performance leadership insured by the finest development laboratory in the heating industry.
 Backing by the big name company with 60 years of history and a sure future.

. . . gives you a selling punch the other fellow does not have.

Other hot points are . . . healthful "live atmosphere" action, no stuffy dead-air rooms; banishing of "layer-cake" heat separation notable with stop-and-go types of heating; summer fanning and filtering facilities; heavy, dependable long-life construction throughout; a "Bonderized" finish, resistant to scratching and chipping; choice of gas or oil fired models and a size for every home heating need; a companion line of "Thermaflow" non-blower models (also with three-stage continuous fire); special units for popular basementless type homes.

* Yes, there are a few (and we do mean few) such franchises still open in good territories.

Qualifications for a Superfex dealer: Determination, Dependability, and a bit of DO. If you have them, and want to build a permanent profitable business, contact the home office without delay.

Superfex FURNACES

GAS OR OIL

PERFECTION STOVE COMPANY

7919-A Platt Avenue Cleveland 4, Ohio



Small Homes need economical RUST PROTECTION...

Provide it with COPPER

NOTHING takes the joy out of homeownership any quicker than a house that leaks. Yet, many homebuilders have had the mistaken idea that durable copper sheet metal work is too expensive for the small home.

Anaconda advertising through the years has been telling millions of homeowners and potential homebuilders that Anaconda Sheet Copper for flashings, gutters and leaders will cost less in the long run.

From your own standpoint, remember that

it pays to use copper . . . the metal that never lets you down.

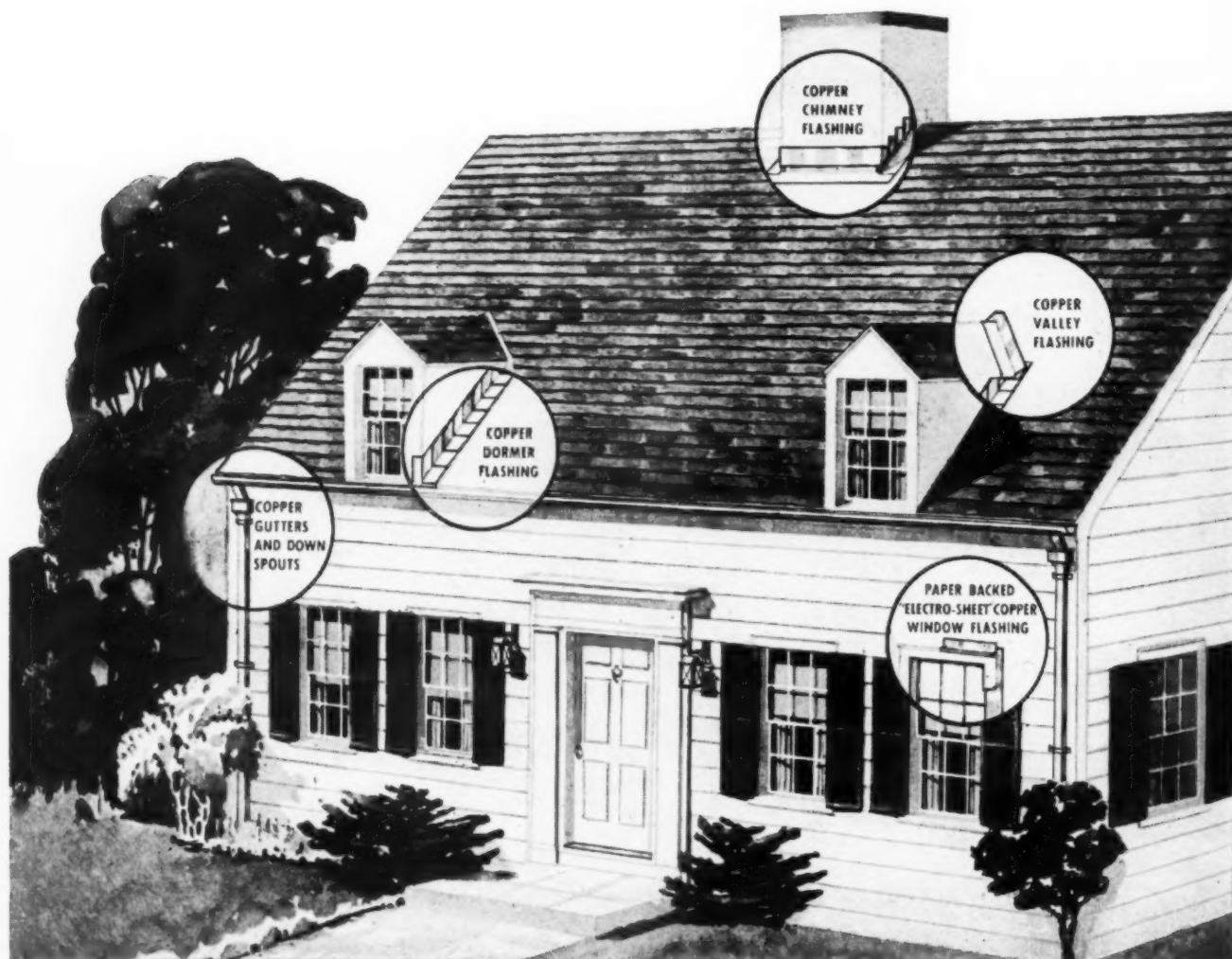
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ANACONDA
from mine to consumer

Anaconda

COPPER

THE AMERICAN BRASS COMPANY
General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD.,
New Toronto, Ont.



HIT A HIGH NOTE IN PROFIT with PENN *Streamlined Installations*

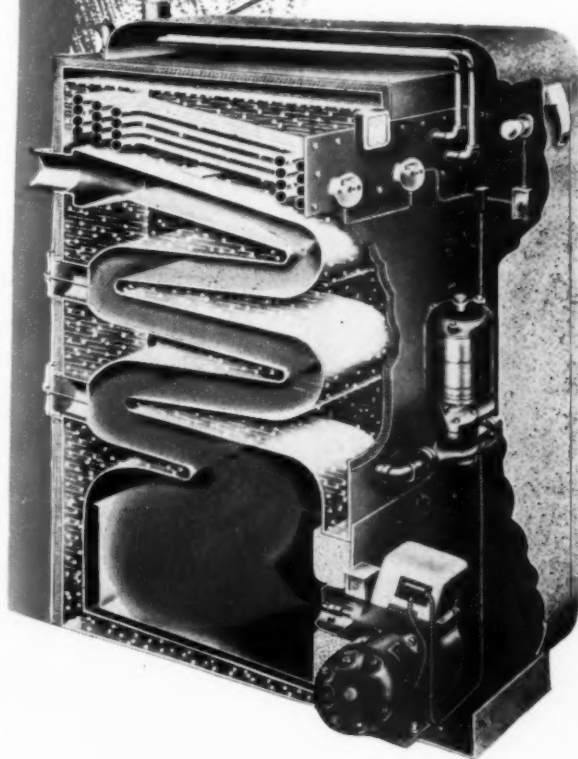
PENN is the **Packaged Heat** that sets a new, fast modern tempo for automatic heat installations. Penn goes in faster because it's the first truly complete package of oil or gas heating. It comes to the dealer fully pre-fabricated and integral-engineered with controls, burner and circulator mounted at the factory. This is made possible only by PENN'S "wing" construction . . . and that construction is exclusive and patented.

HIGHER PROFIT AT A LOWER SELLING PRICE!

The result of PENN streamlined installation is this: **YOU INCREASE YOUR PROFIT WITHOUT RAISING YOUR SELLING PRICE AS MUCH AS A NICKEL!** In fact, the selling price of PENN **Packaged Heat** is **LOWER** than that charged for comparable units.

And with streamlined PENN **Packaged Heat** installations—you deliver year-round, instant hot water! A tank or tankless heating coil in all PENN **Packaged Heat** units supplies automatic hot water without need of a separate water heater. There's a feature with plenty of sales appeal for your customers!

Put more profit in your sales—plug the entire PENN line.



PENN *Packaged Heat* is available in all residential capacities and includes split systems and air conditioners.



Export Office
80 Broad Street
New York 4, N. Y.

Canadian Distributor
R. G. Dibble Company
Toronto, Canada

Canadian Distributor
Actrite Equipment Company
768 St. Paul St., West, Montreal 3, Canada

PENN BOILER and BURNER MFG. CORP.
LANCASTER, PENNSYLVANIA

Small Homes need economical RUST PROTECTION...

Provide it with COPPER

NOTHING takes the joy out of homeownership any quicker than a house that leaks. Yet, many homebuilders have had the mistaken idea that durable copper sheet metal work is too expensive for the small home.

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From your own standpoint, remember that

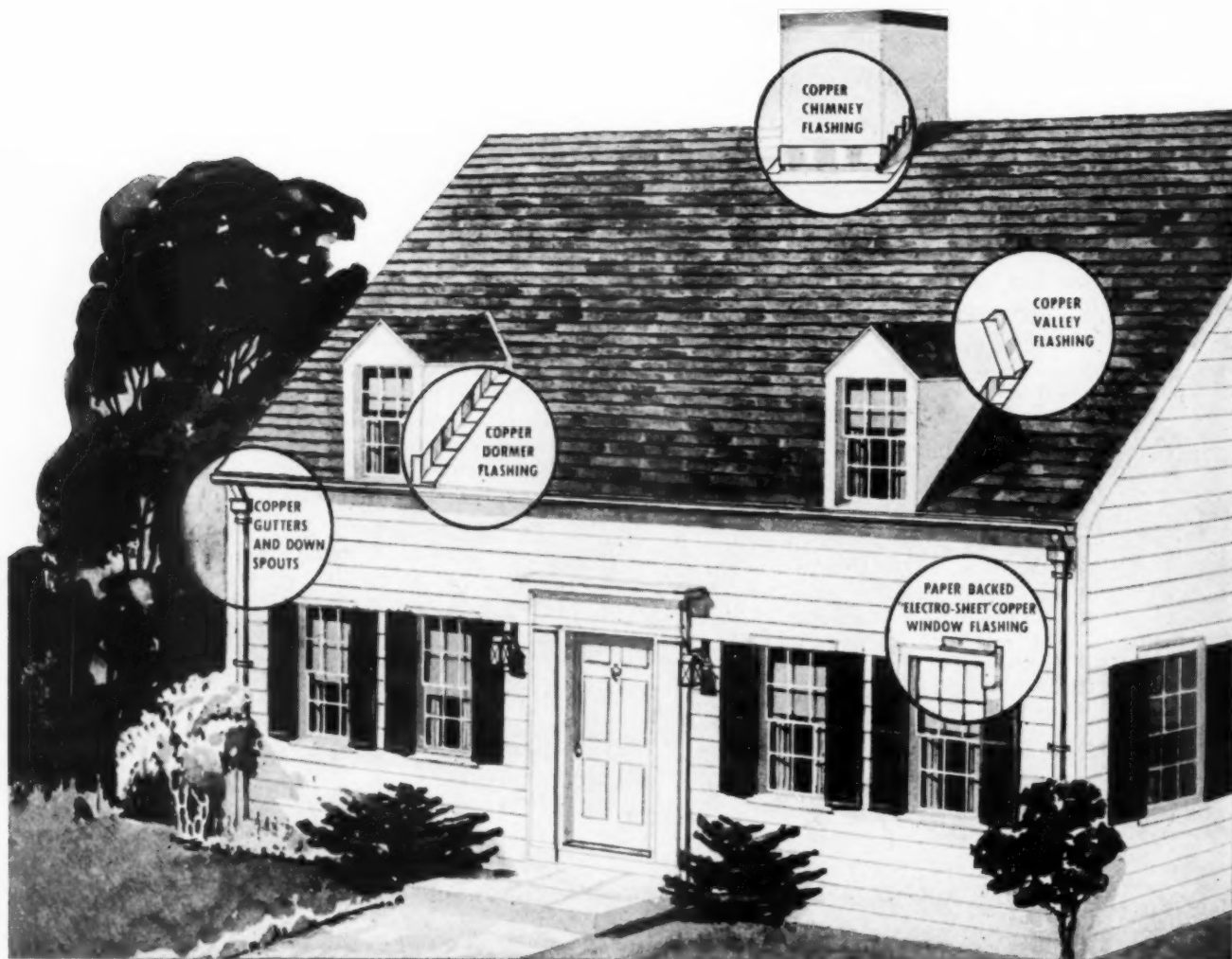
it pays to use copper . . . the metal that never lets you down.

65N7 Rev.

ANACONDA
from mine to consumer

Anaconda **COPPER**

THE AMERICAN BRASS COMPANY
General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD.,
New Toronto, Ont.



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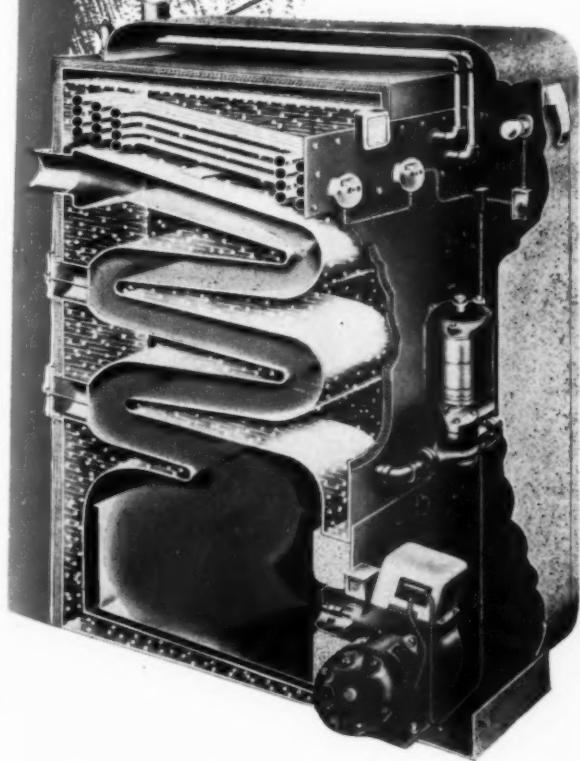
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768 St. Paul St., West, Montreal 3, Canada

PENN BOILER and BURNER MFG. CORP.
LANCASTER, PENNSYLVANIA

*No Heating System
is Complete
Without It!*

**KILLS GERMS
AIRBORNE IN
THE HOME...
THROUGH THE
HEATING AND AIR
CONDITIONING
SYSTEM**

**EQUIPPED
WITH**



GERMICIDAL LAMPS STERILATOR

The Biggest thing in the country today is germicidal lamps... and here's a new application that is as important in every home as any single feature! It has been proven and tested thoroughly — with great consumer demand in test

markets. Act now — and get started with the **STERILATOR**... the newest boon to mankind.

ALERT DEALERS WANTED

THERE are dealerships open in certain key cities for the **STERILATOR**... wire, write or call us for full particulars! Don't delay — act now — tomorrow may be too late! Write Dept. B

DOMESTIC DEVICES

1495 WARRENSVILLE CENTER ROAD • CLEVELAND, OHIO

Quiet

IS THE WORD

FOR HEIL



FREE FROM PULSATIONS

VIBRATION IS GONE

CAN'T CAUSE RADIO INTERFERENCE

LONG FAMED FOR THEIR SILENCE, NEW HEIL UNITS ARE EVEN MORE FREE FROM NOISE AND VIBRATION

Through nearly a quarter of a century, Heil has gained a reputation for building the most quiet burners on the market—so, naturally Heil protects that reputation by putting emphasis on noise elimination. The new Heil models hit a peak in smooth, quiet operation.

Silence starts with the flame—and the uniform, stabilized flame fronts in all Heil units are free from annoying pulsations. Quiet depends on smooth burner operation—so Heil burners are carefully and accurately machined and then balanced to run without vibration . . . a big factor in long life and freedom from trouble. The panels at your right show how Heil oil-fired units utilize every new method to eliminate noise.

Smoothness is just one feature of the amazing new Heil models. Just as much care goes into making them as efficient, as dependable, as easy to adjust and service as they are quiet. In every way, Heil has packed these new units with features that sell customers and keep them sold.

GET MORE CUSTOMERS...MORE EASILY...WITH HEIL

The outstanding new Heil Oil-fired units have every feature you want to sell your prospects—from the most distinctive styling in the industry to brilliant engineering that leads the field. Back of these is Heil's twenty-five year old reputation in oil-fired heating. To top it off, Heil gives you an aggressive merchandising program that can't miss. It all adds up to a mighty valuable—and profitable—franchise.

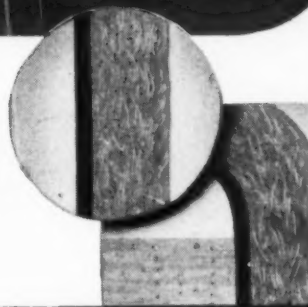
HEIL WINTER AIR CONDITIONERS ARE QUIET

Fans are floor-mounted in the new Heil Winter Air Conditioners to reduce transmitted vibration. The fan motors are floating-power mounted so that even starting and stopping is smooth.



HEIL BOILER-BURNER UNITS ARE QUIET

Even though the smooth-running Heil burners are whisper-quiet, Heil adds a thick insulating panel between the unit-front and the boiler, and wraps the boiler completely with a generous layer of blanket insulation.



WRITE TODAY... TERRITORIES ARE GOING FAST

Take the first step toward a profitable association with a company whose reputation for friendly, honest dealings is nationwide. Mail the coupon now and get details on the new Heil models and information about the valuable Heil franchise.

THE HEIL CO., Dept. A-8
Milwaukee 1, Wisconsin

Please send me your new dealer specification sheets showing full color reproductions of Heil 1947 Boiler and Furnace-Burner models with complete details about a Heil franchise and openings in my territory.

Name

Company

Address

City Zone State



THE HEIL CO.

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

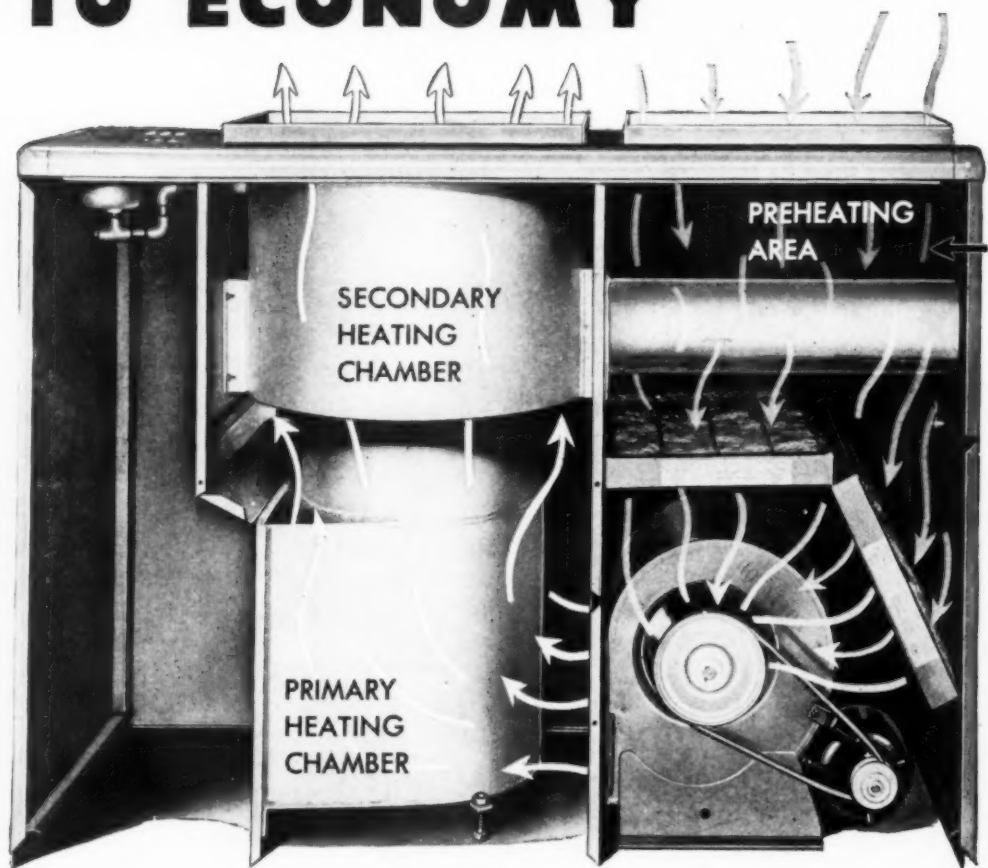
Manufacturers of Quality Automatic Heating Equipment Since 1924

Follow the arrows

TO ECONOMY

The Fitzgibbons Directaire works ideally with either the oil or gas burner of your choice. The attractive jacket completely encloses most burners and all controls. Jacket panels are quickly removable for easy servicing.

The Directaire is built entirely of steel, electrically welded into a gas-tight unit. The jacket assembles easily and quickly. And the oil or gas burner operates at highest efficiency, providing lowest possible operating costs.



LOW-COST ALL THE WAY The principle of "Contra-Flo" Circulation as applied in the Fitzgibbons Directaire, takes every possible B.t.u. out of the fuel and applies it to heating the circulated air. This is the basis for Directaire operating economy. The incoming air first enters the preheating area . . . Then it is drawn through the filter, by the large, slow-speed quiet blower, and into the primary heating chamber . . . Then up into and through the secondary heating chamber, where it also receives humidification.

Six sizes — 65,000 to 200,000 B.t.u./hr. Full data in the bulletin on request.



Fitzgibbons Boiler Company, Inc.

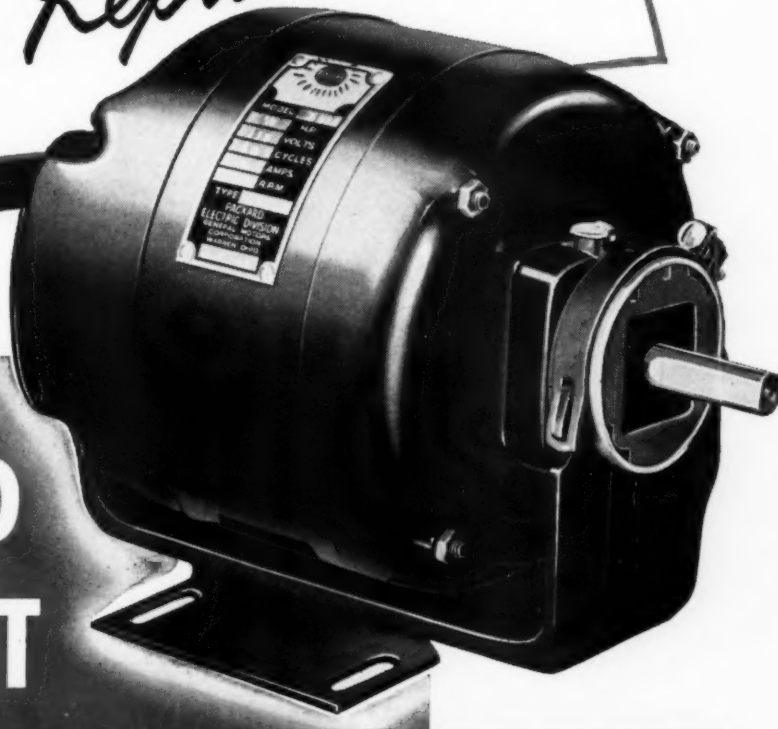
101 PARK AVENUE, NEW YORK 17, N. Y.

Manufactured at: OSWEGO, N. Y.

Sales Branches in Principal Cities

FITZGIBBONS DIRECTAIRE
The warm air conditioner that meets all conditions

*No motor has a
Finer Reputation*



PACKARD SUNLIGHT MOTORS

Since the early days of the appliance industry, Packard Sunlight motors have been recognized for honest quality. Today's Packard Sunlight motors uphold that reputation. They assure dependable motor performance on leading makes of appliances.

Packard
REG. U.S. PAT. OFF.
TRADE MARK

Packard Electric Division, General Motors Corporation, Warren, Ohio

**PACKARD
SUNLIGHT MOTORS**
for
compressors
washing machines
power-driven
bench tools
ironers
milk separators
milking machines
furnace blowers
stokers
oil burners
water pumps
ventilators
and many other
applications

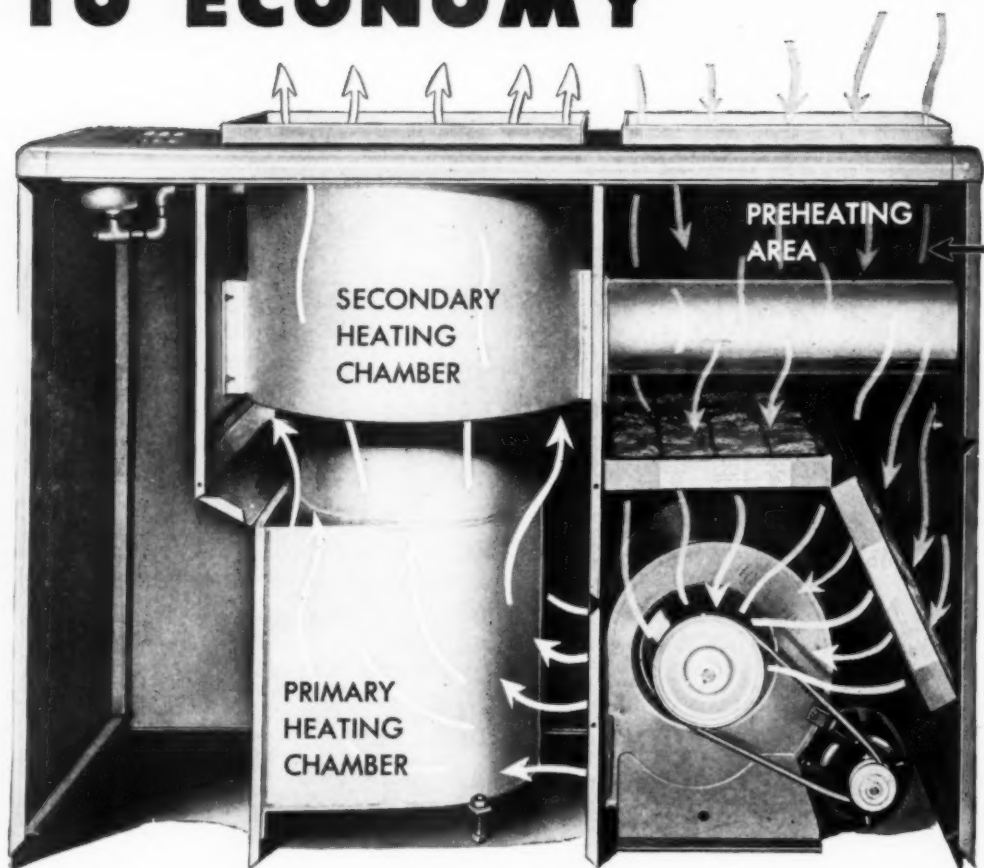
DEPENDABLE APPLIANCE MOTORS FOR THIRTY YEARS

Follow the arrows

TO ECONOMY

The Fitzgibbons Directaire works ideally with either the oil or gas burner of your choice. The attractive jacket completely encloses most burners and all controls. Jacket panels are quickly removable for easy servicing.

The Directaire is built entirely of steel, electrically welded into a gas-tight unit. The jacket assembles easily and quickly. And the oil or gas burner operates at highest efficiency, providing lowest possible operating costs.



LOW-COST ALL THE WAY The principle of "Contra-Flo" Circulation as applied in the Fitzgibbons Directaire, takes every possible B.t.u. out of the fuel and applies it to heating the circulated air. This is the basis for Directaire operating economy. The incoming air first enters the preheating area . . . Then it is drawn through the filter, by the large, slow-speed quiet blower, and into the primary heating chamber . . . Then up into and through the secondary heating chamber, where it also receives humidification.

Six sizes — 65,000 to 200,000 B.t.u./hr. Full data in the bulletin on request.



Reg. U.S. Pat. Off.

Fitzgibbons Boiler Company, Inc.

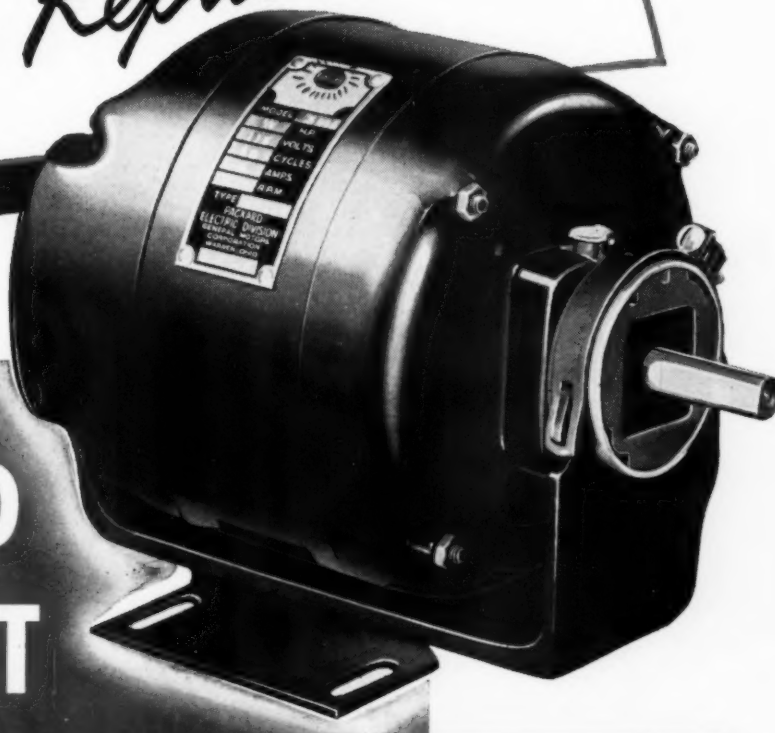
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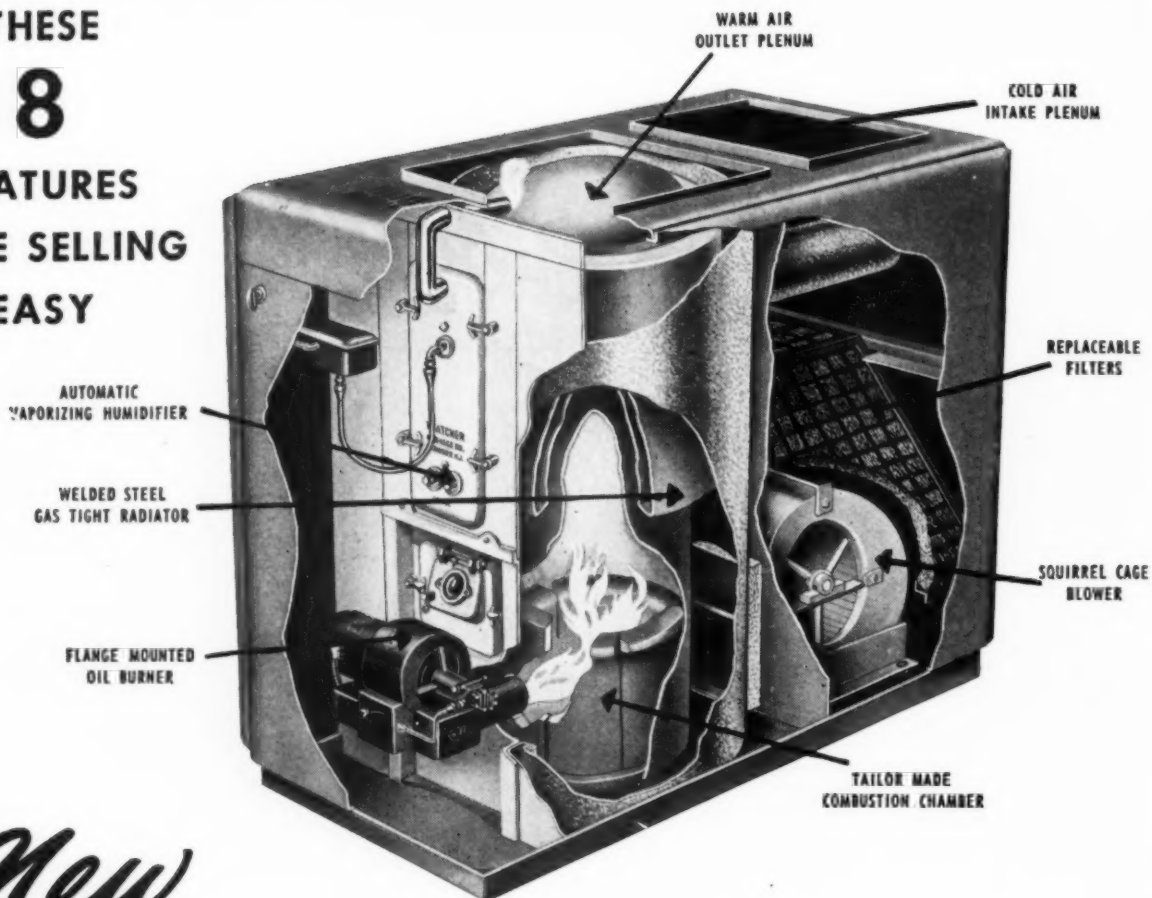
Packard
REG. U.S. PAT. OFF.
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**PACKARD
SUNLIGHT MOTORS**
for
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power-driven
bench tools
ironers
milk separators
milking machines
furnace blowers
stokers
oil burners
water pumps
ventilators
and many other
applications

DEPENDABLE APPLIANCE MOTORS FOR THIRTY YEARS

THESE
8
FEATURES
MAKE SELLING
EASY



New

THATCHER "V" SERIES COMFORTMASTER

Automatic, Oil-Fired Winter Air Conditioner

More and more, your customers are demanding extra value for their dollars. That's why Thatcher's new "V" Series Comfortmaster fits right into your selling picture. When you point out and explain the Comfortmaster's features, you'll find the unit practically sells itself.

What's more, people already know the kind of life-long heating comfort they get with Thatcher. When you sell Thatcher, you cash in on the name and reputation it's taken Thatcher 97 years to build. For increased profits, recommend yourself by recommending Thatcher — your warm friend since 1850.



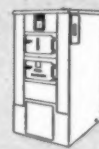
Thermostat
Gravity
Furnace



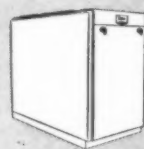
GA
Comfortmaster
Air Conditioner



Series A
Oilmaster
Boiler



Triple-Fire
All-Purpose
Boiler

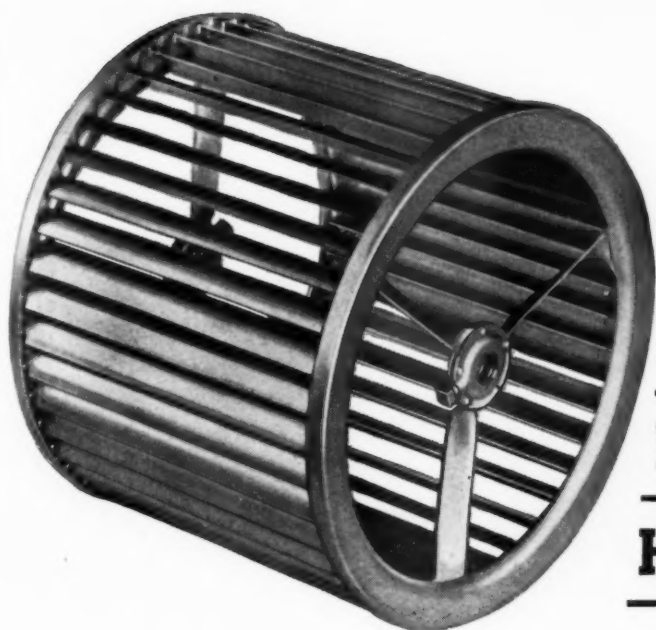


V Series Comfortmaster
Oil fired
Air Conditioner

Thatcher

FURNACE COMPANY
Garwood, New Jersey

SPECIALISTS IN HEATING SINCE 1850



**TO ORIGINAL EQUIPMENT
MANUFACTURERS IN
HEATING, VENTILATING
and AIR CONDITIONING**

★ *Check with Morrison*

- 1** For complete Engineering Service, including templates, shop drawings, tables, data, and consultant help.
- 2** For standard equipment wheels of high efficiency, smooth running, lightweight and 3-piece welded construction.
- 3** For wheels in wide range of sizes — Double Width — Double Inlet.
- 4** For Scroll Sides or Squares for low cost assemblies in your sheet metal department.

Definite savings in Morrison Airstream Blower Wheels.

★ *Ask for booklets with graphs, charts,
and other detailed information.*



MORRISON PRODUCTS, INC.

East 168th Street and Waterloo Road
Cleveland 10, Ohio



Timken Oil Heat for 3,000-home project!



A stairway recess is more than enough space for a Timken Oil Boiler. Its great compactness, fine appearance and complete quietness permit locating it in living quarters—cutting cost and conserving room.

THREE THOUSAND modern homes in 12 months—each with its own landscaped lot—for sale to veterans at only \$6,990 (or rental at \$60 per month)!

These new homes are complete with range, refrigerator, automatic washer, metal kitchen cabinets, built-in bookshelves, Venetian blinds—and owners also will enjoy the finest heating money can buy—Timken Silent Automatic Oil Heat with the thrifty Timken Wall-Flame.

This, in a nutshell, is the story of the giant housing project launched this year by Levitt & Sons at Hempstead, Long Island.

Choice of Timken for supplying both automatic heat and hot water for Levitt Homes is more than a testimonial to the high public esteem in which the name *Timken* is held everywhere.

It is also a tribute to Timken economy, compactness, appearance and quietness—qualities that make Timken Oil Boilers ideal for small home construction.

Interesting? Yes—not only to owners and builders, but particularly interesting to holders of the Timken Dealer Franchise!

The Royal Family of Oil Heating



OIL
BURNERS



OIL
BOILERS

TIMKEN *Silent Automatic* **OIL HEAT**

TIMKEN SILENT AUTOMATIC DIVISION
The Timken-Detroit Axle Company
JACKSON, MICHIGAN



OIL
FURNACES



WATER
HEATERS

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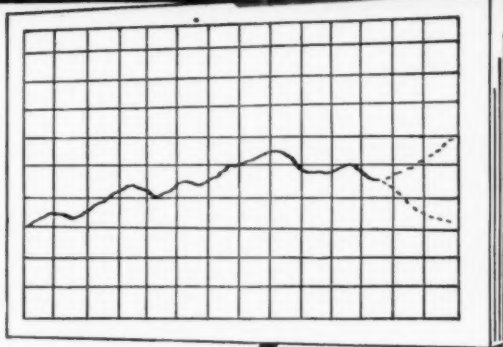
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HOW IS YOUR SALES BAROMETER?



THE *Elno* PROTECTOR

WILL BOOST IT...

EVERY OWNER OF A STEEL HOT WATER

STORAGE TANK A POTENTIAL BUYER!

YES, how is your sales barometer? With the present shortages in steel, piping, fixtures, etc., it is undoubtedly below the parallel you would like to see it at. But cheer up, for here is your opportunity to give that old barometer a real boost with the "ELNO" Protector.

The ever increasing demand for rust-free hot water puts "ELNO" in the spotlight, for "ELNO" is a device to eliminate rust and corrosion in hot water storage tanks. "ELNO" is a MUST for every galvanized steel water storage tank.

The "ELNO" protects by sacrificing itself. By an electro-chemical reaction, it bears the brunt of corrosive attacks of various kinds within the tank, leaving the tank itself unaffected and the water entirely free of rust. RUST SIMPLY DOESN'T START WHEN THIS SPECIAL ALLOY ROD IS USED.

So once again, The Cleveland Heater Co., maker of the famous "REX" automatic water heater, is out in front with another sales barometer-boosting item, the "ELNO" Protector. Easily installed, attractively priced, and best of all there is no delay in shipments. ORDER DIRECTLY FROM STOCK!

Send for Catalog C-107, and get underway on "OPERATION BAROMETER-BOOSTING".



**THE
CLEVELAND HEATER CO.**

"ELNO" DIVISION
2310 Superior Ave.
Cleveland 14, Ohio

Powered to Build Better Profits . . .

ADVANCE-DESIGN CHEVROLET TRUCKS

WITH THE CAB THAT "BREATHES"

America's first ADVANCE-DESIGN trucks, featuring the larger, roomier cab that "breathes"! The unique new cab almost literally "inhales" fresh air and "exhales" used air,* assuring day-long driver comfort and efficiency. Other new features and innovations make these the trucks to see *first* at your Chevrolet dealer's!



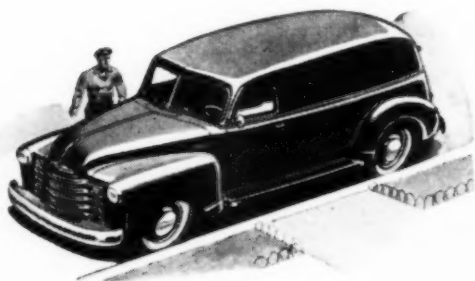
Extra-economical and powerful Chevrolet VALVE-IN-HEAD ENGINES are time-savers, profit-makers! There are exclusively designed HYDRAULIC TRUCK BRAKES, too, with greater brake-lining contact for quick, safe stops!



Better load distribution, due to LONGER WHEELBASES. FULL-FLOATING HYPOID REAR AXLES mean extra pulling power! They're geared for the load!



More efficient loading in stake and high rack bodies—more **LOAD SPACE** in panels and pick-ups. Chevrolet truck **FRAMES** are new, stronger and sturdier, designed to carry greater loads for a longer time!



**Fresh-air heating and ventilating system optional at extra cost.*



CHEVROLET TRUCKS

FOR TRANSPORTATION
UNLIMITED



CHEVROLET MOTOR DIVISION, General Motors Corporation, DETROIT 2, MICHIGAN

Your Chevrolet dealer can supply standard or special equipment for your specific hauling needs.

Angle #4

Some New Angles
on
**INDUSTRIAL
and
COMMERCIAL
HEATING**

74°

70°

70°

65°



WORKING-LEVEL RECIRCULATION

Actual tests with balloon-suspended thermometers in a building with 200,000 square feet of roof showed temperature differential between roof and working area to be only 9 degrees with Dravo Heaters. This is a big fuel-saving advantage when compared with other methods in which roof area temperatures are often 35 degrees higher than those at the working level.

The Dravo Counterflo Heater, oil or gas-fired, offers today's highest possible efficiency for open space heating. It recirculates warm air in the working level, thus minimizing the tendency of the heated air to rise and cause excessive heat losses through the roof. Under the Dravo method warm air is discharged above the heads of the workers and cool air is taken off the floor. This provides a thermostatically controlled comfort zone in the working level with no annoyance to workers.

In addition to saving fuel through low roof heat loss, the Dravo Heater is extremely economical in

these respects . . . **Sustained efficiency of 80 to 85%**—constantly getting more Btus from each gallon of oil or cubic foot of gas burned. —**Lower initial cost compared with indirect heating systems.** —**Ease of installation . . . it is necessary only to provide power line, fuel line and stack.** —**No stand-by heat or specialized attendant is necessary.** Heater operates only when thermostat dictates your requirements.

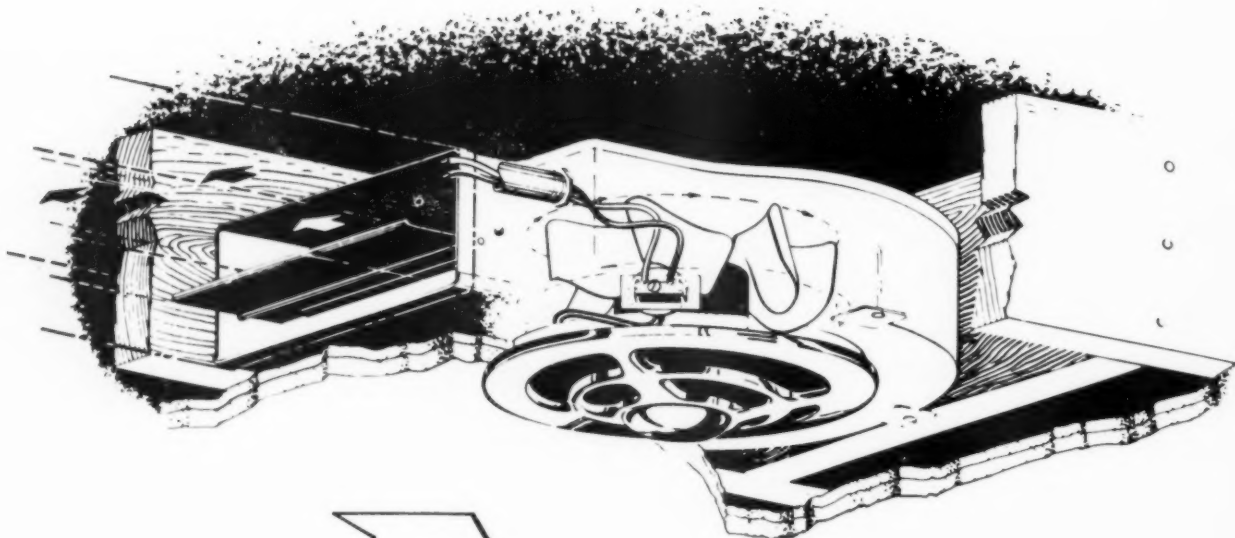
Dravo Heaters are available in capacities ranging from 400,000 to 2,000,000 BTUs per hour output. The money-saving angles for Industrial and Commercial Heating with DRAVO COUNTERFLO DIRECT FIRED HEATERS are more fully described in Bulletin DJ- 516. Write Heating Section, DRAVO CORPORATION, 300 Penn Ave., Pittsburgh 22, Pa.

Dravo Counterflo Direct Fired Heaters are products of the Machinery Division.

DRAVO CORPORATION

PITTSBURGH • PHILADELPHIA • CLEVELAND • NEW YORK
DETROIT • WASHINGTON • ATLANTA • WILMINGTON





where a FAN belongs

BLO-FAN electric ceiling ventilator builds in between the ceiling joists *directly over the kitchen range*—where a fan belongs.

BLO-FAN ducts out smoke, odors, and grease laden air...
as they rise...before they spread!

BLO-FAN'S patented blade provides the volume of a propeller with the power of a blower.

Blo-Fan

MORE THAN A FAN
MORE THAN A BLOWER

NATIONALLY DISTRIBUTED—WRITE FOR COMPLETE INFORMATION

PRYNE & CO., INC., LOS ANGELES 54, CALIFORNIA • NEW YORK • CHICAGO

A New Kind of Oil Burner



with an Amazing Performance

Do you know what it will DO?

This entirely new type of oil burner . . . the first truly postwar oil burner . . . brings you the greatest advance since oil burners were first invented . . . gives the hottest, cleanest oil fire you have ever seen.

THE DUAL-OXENIZER (Patents Pending) gives a double charge of oxygen to the oil spray—yet cuts down excess air—gives exceptionally high CO₂.

In comparative tests, this burner excelled competitive oil burners in CO₂, lower stack temperature, higher evaporation of water per pound of oil—and in overall efficiency of boiler-burner.

THE ELECTRONIC CONTROL gives instant safety action, cuts down wiring in original installation, makes service easier.



HARVEY-WHIPPLE INC.
Springfield, Mass.

This burner bristles with new sales features—can be sold in volume *right now* because it will save oil for the user! Mail the coupon for details.

HARVEY-WHIPPLE, INC.
DEPT. AA-8
SPRINGFIELD, MASS.
GENTLEMEN:
Please send me information about the new Master Kraft oil burner.

NAME

ADDRESS

CITY

STATE

Let these
26 years of
EXPERIENCE

help you paint
a brighter
PROFIT
PICTURE

Kleen-Heet

oil burning equipment

It takes a knowing hand to paint a picture or produce a profit! That's why more dealers everyday are featuring equipment made with "Know-How"—based on long experience—to turn prospects into customers and sales into profits. Find out how this engineering skill and reputation can help improve your business picture . . . write for complete dealership details today!



NEW LOW COST STEEL BOILER UNIT

You'll find this boiler easier to sell because it is handsome in appearance, efficient in operation and unusually low in price. Complete with built-in combustion chamber, tank or tankless heater, jacket, burner and controls.



WIDE RANGE PRESSURE BURNER

Capacity 0.6 to 6.0 gallons per hour to efficiently heat large as well as small homes. Equipped with famous, exclusive Governoil Nozzle for perfect combustion.

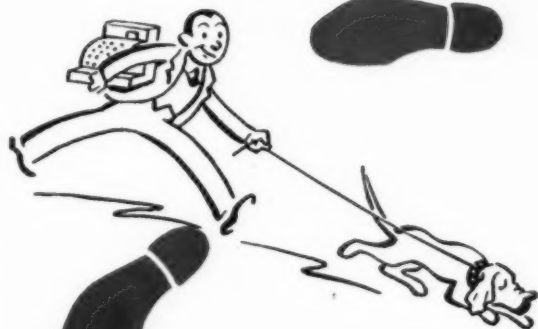
Kleen-Heet

KLEEN-HEET INCORPORATED

1823 CARROLL AVENUE — CHICAGO 12, ILLINOIS

The Trail

to Sales

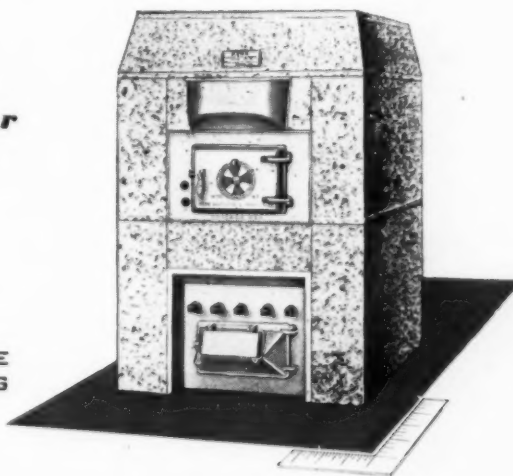


The trail signs to success are, once again, the quality features that sell folks on a name—and keep them sold after years of experience with a product. HESS furnaces are famous for high calibre workmanship and engineering developments—for leadership in providing better heating for better living. Valuable, indeed, will be a HESS *Warming & Ventilating Company* dealership in the busy, building years ahead. Fortunate will be the man who features HESS Welded Steel Furnaces, Automatic Oil Burners, Automatic Coal Stokers, and HESS Blower Filter Units. For, behind him will lie the more than 74 years of HESS experience in building quality heating equipment . . . a service that is recognized by the thousands of satisfied HESS customers.

DEALERS

**Write today for
details on the
HESS line.**

ON THE SQUARE
RADIANT HEATING



HESS

Since 1873

WARMING & VENTILATING CO.

1211 So. Western Ave., Chicago 8, Ill.

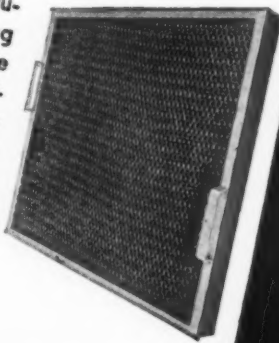
THE AGITAIR EFFICIENCY FILE

for

AIR CONDITIONING & VENTILATING SYSTEMS

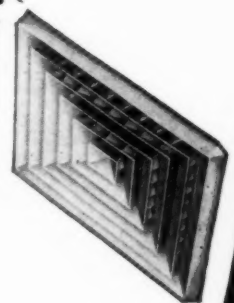
FILTERS

High Velocity Agitair Air Filters, with exclusive Turbulent Cleansing Action, filter 50% more air with greater efficiency at the high velocity of 432 F.P.M. In all types and sizes for air conditioning, ventilating, and industrial applications.



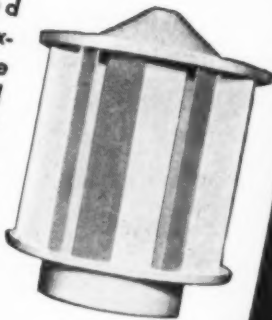
DIFFUSERS

Agitair Air Diffusers with Diffusion Pattern Control permit 100% control of air distribution—with no drafts, no blank corners, no hot spots, no cold spots. Available in attractive, highly efficient styles, both rectangular and circular, to fit any installation.



EXHAUSTERS

Wind Actuated Agitair Exhausters exhaust up to 50% more air at average wind velocity . . . will not retard natural ventilation even with no breeze. Ideal for both gravity and mechanical air exhaust systems.



You'll find a spot for Agitair in every heating, ventilating and air conditioning installation. Choose Agitair products with the complete assurance of service, quality, and dependability.

Contact the friendly Agitair representative in your vicinity for help with your heating and conditioned-air problems.

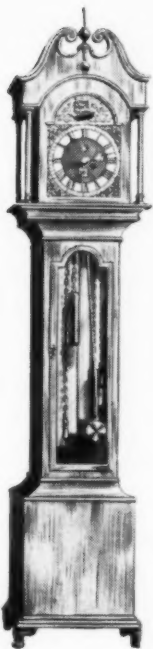
Send for Data on Complete Line

AT 3 KEY POINTS IN AIR CONDITIONING—AGITAIR SERVES BEST

1 FILTERS  **2 DIFFUSERS**  **3 EXHAUSTERS** 

and also  **DIRECT-FIRED HOT GAS GENERATING FURNACES etc.**

AIR DEVICES, INC. • 17 EAST 42nd STREET • NEW YORK 17, N. Y.



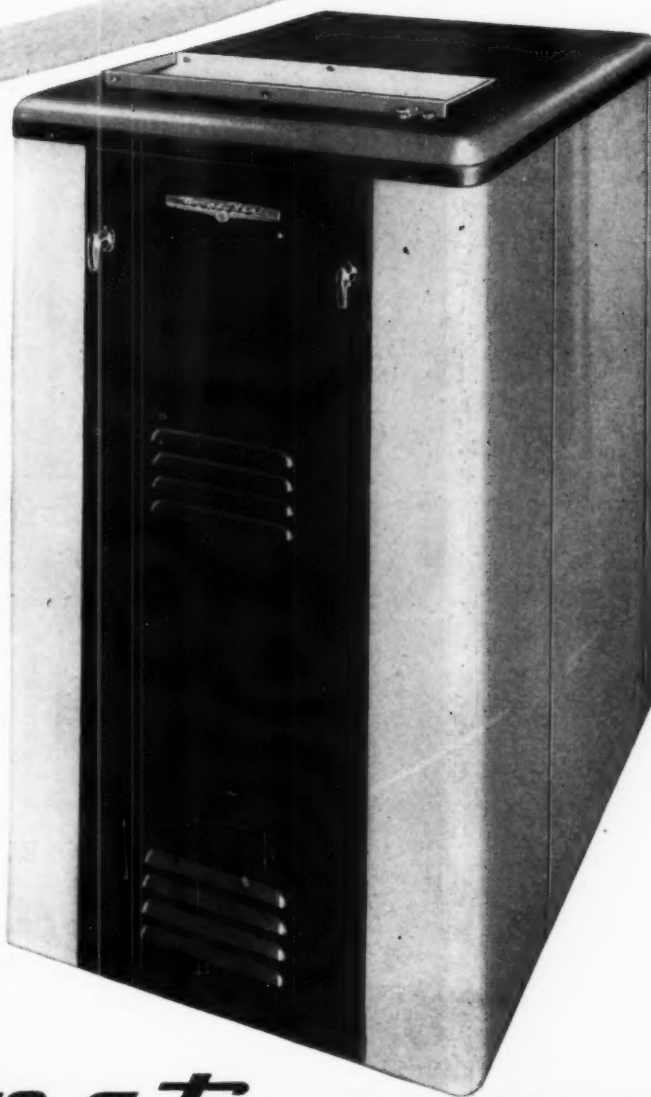
PROVED!
UNVARYING PERFORMANCE

NORGE HEAT
WINTER AIR-CONDITIONER
with
VACUUM-DRAFT
and **STEADIHEAT**

With NORGE-HEAT's exclusive VACUUM-DRAFT, heating performance *never* varies, no matter how the weather changes. That's why these new air-conditioning furnaces—and they alone—can produce the more even, more consistent kind of heat called STEADIHEAT!

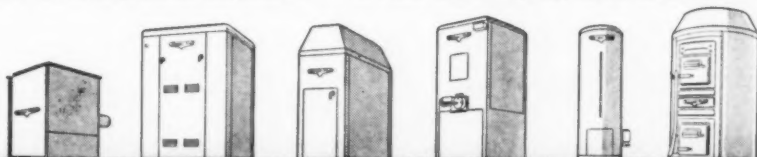
Instead of *pushing* air into the fire chamber the old way, VACUUM-DRAFT *pulls* it through. As a result, the draft is *precisely regulated* by the blower. Combustion is never thrown out of balance by variations in chimney drafts. To your customers, this means far more even heat, and less fuel required to produce it. What's more, the heat is cleaner and free from fumes, since pressure in the combustion chamber is always lower than that in the house.

In VACUUM-DRAFT, you have an outstanding feature to sell . . . actually, the first basic advancement in home-heating in many years. It is one of many reasons why NORGE HEAT winter air-conditioners are the latest thing in fine heating equipment.



Norge Heat

Division of Borg-Warner Corporation • 574 East Woodbridge St., Detroit 26, Mich.



New Literature

For your convenience in obtaining information regarding these items, use the coupon on page 128.

207—Aluminum Fittings

Catalog 47-S contains the complete line of forced air and gravity aluminum fittings, illustrated, and with list prices; as well as complete illustrations of forced air and gravity registers. — *Char-Gale Manufacturing Company, 3127 Hiawatha Avenue, Minneapolis 6.*

208—Allegheny Metal—Dairy Industry

"Allegheny Metal in the Dairy Industry"—34 pages—covers specific applications, performance records, etc., pertaining to the industry; also information on corrosion resistance, physical properties, fabricating procedures, and forms of Allegheny stainless available. — *Joseph T. Ryerson & Son, Inc., Box 8000-A, Chicago 80, Ill.*

209—Teg Conditioner

A four-page folder—Ultimate Indoor Comfort with Residential Winter Air Conditioning—pictures and describes the Teg Conditioner which automatically filters, washes and humidifies with the aid of Triethylene Glycol (Tegylene)—a harmless, odorless and non-corrosive liquid. The Teg can be adapted to existing installations. — *L. J. Mueller Furnace Co., 2005 W. Oklahoma Ave., Milwaukee 7.*

210—Metal Cutting Tool

A folder telling what others say about the new Schild metal cutting tool includes a complete description of the tool with illustrations and an order blank. — *Schild Manufacturing Co., 739 N. Broadway, Milwaukee 2, Wis.*

211—Luxaire Gravity Furnaces

A six-page folder gives the highlights and specifications on the new Luxaire square cased steel gravity furnace, featuring new methods of welding, new die formed radiator, and other advanced features in steel furnace construction. — *C. A. Olsen Manufacturing Company, Elyria, Ohio.*

212—Planned Systems Bulletin No. 501

Bulletin No. 501 contains twelve pages illustrating complete systems specially designed for metal preparation, spray painting, baking and drying, metal cleaning and rust proofing, Hydro-Whirl wet type paint spray booths, industrial ovens and dryers, and paint dipping and flo-coating. — *Peters-Dalton, Inc., 17908 Ryan Road, Detroit 12.*

213—Sheet Metal Work

Neubecker's "Sheet Metal Work" (fifth edition) indexed contains 360 pages, 412 illustrations, of practical self-instruction in pattern drafting and construction work in light and heavy gage metal. Contents: Tools and method of obtaining patterns; developments by triangulation; problems—workshop, light gage metal, coppersmith, heavy metal; skylights; roofing; cornice work; patterns for forced-air fittings; practical problems in mensuration for sheet metal workers. (Price \$2.50). — *American Technical Society, 850 E. 58th St., Chicago 37.*

Leading the Field

MULKEY

Manufacturers of
Oil and Gas
Floor Furnaces

•
Conversion Burners

•
Oil Trailer Heaters
and Room Circulators



TRAILER HEATERS



FLOOR FURNACE

Oil

FLOOR FURNACE

IN THE LONG RUN

EXPERIENCE AND PERFORMANCE COUNT

WHOLESALEERS • DEALERS • BUILDING CONTRACTORS

Write or wire today for immediate delivery

J. F. MULKEY CO.

12626 WOODROW WILSON • DETROIT, MICHIGAN

23 YEARS OF EXPERIENCE IN DESIGN AND MANUFACTURING

New Literature

For your convenience in obtaining information regarding these items, use the coupon on page 128.

214—Sno-Breze Coolers

A folder with space for dealer imprint illustrates and describes the Sno-Breze evaporative coolers—window type fan models; super fan Model 3000 for cottages and small homes; and blower models for homes, business and industrial buildings. Installation suggestions are given, as well as a guide for choosing the correct size cooler.—Palmer Manufacturing Corporation, 705 W. Jefferson St., Phoenix, Arizona.

215—Estimating Moisture Permeation

A four-page air dryer Datagram covers estimating moisture permeation through wall, ceiling and floor structures. Tables and graphs accompany the text and the method is offered as a fairly accurate estimate of the expected moisture permeation for various types of construction. A two-page folder illustrates and describes silica-gel air-dryer, with specifications.—Bryant Heater Company, 17825 St. Clair Ave., Cleveland 10.

216—Hospital Air Conditioning

Refrigerating Engineering Application Data—Section 38—Hospital Air Conditioning by W. S. Bodinus mentions factors which should be kept in mind when planning to air condition a hospital—patients' rest, relaxation from disturbing elements and quiet. Construction and operating costs are still of utmost importance. Methods of air conditioning patients' rooms, public space, diagnostic and treatment rooms, operating, delivery and anesthesia rooms, and nurseries are discussed. Data is given on installation and operating costs of the refrigerating equipment. Price 20 cents.—American Society of Refrigerating Engineers, 40 West 40th St., New York 18.

217—Low Temperature Insulation

A 2-color 24-page manual entitled "Holding Low Temperatures with Better Insulation" covers: how to select insulation and what to look out for; data on forms, properties and application methods; and a chapter on the principles and significance of vapor-proofing for various types of wall, floor and ceiling construction. The work contains 15 photographs, 11 diagrams, 7 charts and tables, and analyses of typical case-history installations in (1) cold storage work, (2) freezing processes, (3) cold-aging, (4) food distribution, (5) industrial refrigeration, and (6) air conditioning.

Particularly helpful to users will be: graphs on representative thermal conductivities of various mineral wool forms; a chart for computation of minimum insulation thicknesses to prevent condensation on cold surfaces in various environments; minimum thicknesses and recommended techniques for pipe insulation; data on long-term storage temperatures for various food products; and recommended procedures for the vapor-sealing of masonry, wood, block, and plastered walls.—Industrial Mineral Wool Institute, 441 Lexington Avenue, New York 17.



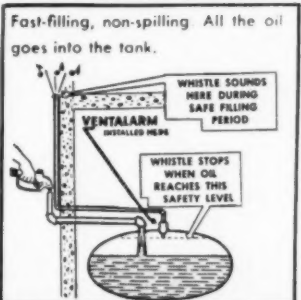
SOLD

TO 1,000,000 HOME OWNERS

VENTALARM

T. M. Reg. U. S. PAT. OFF.

CONVENIENCE AND ECONOMY!



Offer a customer extra convenience and economy in his home and chances are you've made a sale. That's why the VENTALARM Fill Signal can be found today in more than a million oil-heated homes across the Nation.

VENTALARM Signal is designed for use on cellar oil storage tanks, designed to make oil burner installations completely automatic. Its whistling note ceases the instant the tank has been properly filled, insures that all the oil goes into the tank, without overflow or spillage.

VENTALARM Signal guarantees "come-and-go" freedom to the home owner. No need to wait around — the driver need never enter the home to make his delivery. Because of this guarantee of efficiency and economical, convenient service, VENTALARM is in greater demand today than ever before.

VENTALARM Signal is quickly and easily installed on new tanks and existing installations. Write today for complete details and special customer mailing folders. Use VENTALARM on YOUR Burner installations!

Purchase VENTALARM through your regular supply house.

New Literature

For your convenience in obtaining information regarding these items, use the coupon on this page.

218—Furnace Folders and Data Sheets

Jackson & Church Company, 321 N. Hamilton St., Saginaw 65, Mich., is distributing literature covering their coal, hand-fired, forced air and gravity steel furnace; the oil-fired winter air conditioning unit; data sheets 1 to 9; and dimension sheets 13 through 21.

American Artisan,
6 N. Michigan Ave.,
Chicago 2, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "Equipment Developments" and "New Literature." (Circle numbers in which you are interested):

97	98	99	100	101	102	103	104
105	106	107	108	109	110	111	112
113	114	115	116	117	118	119	120
207	208	209	210	211	212	213	214
215	216	217	218	219	220	221	

Name

Company

Address

Are you manufacturer? ☐ Jobber? ☐ Dealer? ☐

219 Breese Burner

Developed for the armed forces during World War II, the Boston Breese burner is now being manufactured in three models for civilian use—hot water heaters, circulating heaters and small furnaces. A folder with space for dealer imprint is available covering the BosMaco conversion burner.—*Boston Machine Works Company, 7 Willow St., Lynn, Mass.*

220—Round Layouts

"Short Cuts for Round Layouts" by Joseph J. Karberlein, Volume 2, embraces the great variety of joints, transitions, elbows, stacks, etc., found in round duct work. Each problem is practical and adaptable, drawn to scale with dimensions which are ample size for metal construction. Price \$3.75.—*The Bruce Publishing Company, 540 N. Milwaukee St., Milwaukee 1, Wis.*

221—Heat Pumps

"Heat Pumps" by Philip Sporn, E. R. Ambrose and Theodore Baumeister is a full-length book devoted exclusively to considerations of heat pump design and installation fundamentals, to applications of the device in building heating and cooling and in industry. The heat pump with its possibility of increasing the potential energy in our fuel to perhaps twice its present value, is an implement of growing concern to America.

Industrially, the heat pump is already at work in such processes as evaporation and purification of liquids, the drying of solids, and the simultaneous chilling and heating of process fuels.

The authors are respectively president, air conditioning engineer and consulting engineer with American Gas and Electric Service Corporation. Price \$3.75.—*John Wiley & Sons, Inc., 440 Fourth Ave., New York 16.*

SUMMERTIME IS General Time

Summertime can be a busy season for those who actively push GENERAL filters. Get your customers lined up with a new fuel oil filter before the next heating season, and they'll be glad you recommended the best fuel oil filter available, GENERAL.



FACTORY REPRESENTATIVES: WILLIAM J. DEBLER & SONS, Newark, N. J., Philadelphia, Pa., Brookline, Mass.; V. B. KATHE, Vancouver, Wash.; W. V. NUTTALL COMPANY, Salt Lake City, Utah; B. E. HOWENSTEIN, St. Louis, Mo.; I. E. SCHULEIN COMPANY, Chicago, Illinois; GRANSE CORPORATION, St. Paul, Minn.; RICHARD BARTHELMSS SALES COMPANY, Jacksonville, Fla.; T. C. FRENCH COMPANY, Akron, Ohio; A. G. ALLEN COMPANY, Indianapolis, Ind.; JEFF A. HEDDON COMPANY, Atlanta, Georgia.

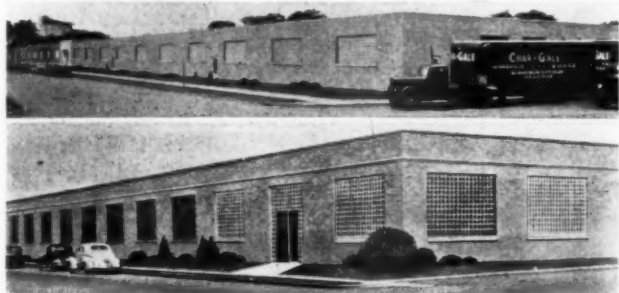
GENERAL FILTERS
INCORPORATED

GENERAL FUEL OIL FILTER

12890 WESTWOOD AVE.
DETROIT 23, MICHIGAN

CANADIAN FACTORY BRANCH: GENERAL FILTERS CANADA, 173 STRACHAN AVE. • TORONTO 10, ONTARIO

With the Manufacturers



Char-Gale's new plants. Above: the Minneapolis plant. Below: the Omaha plant.

At the war's end, the Char-Gale Manufacturing Company decided to use the knowledge of aluminum gained in aircraft building in the manufacture of furnace fittings and concentrated this part of their manufacturing in the Minneapolis factory. When additional facilities were needed to meet the demand, a second plant was constructed in Omaha.

Heating engineers and sheet metal men soon discovered that aluminum was easier to get than other metals and made a good looking installation with less weight to transport and handle on the job. To meet the demands created by this discovery, Char-Gale has again increased its production capacity with a new modern building at 43rd Street and Hiawatha Avenue in Minneapolis, covering an entire city block, to house the general offices and the factory is turning out registers, aluminum furnace fittings, sheet and coil stock and other aluminum products for the heating industry.

The Hasko Utilities Company, wholesale distributors of heating equipment, recently opened a Long Island Branch office at 80 Main St., Mineola, to accommodate customers in that territory.

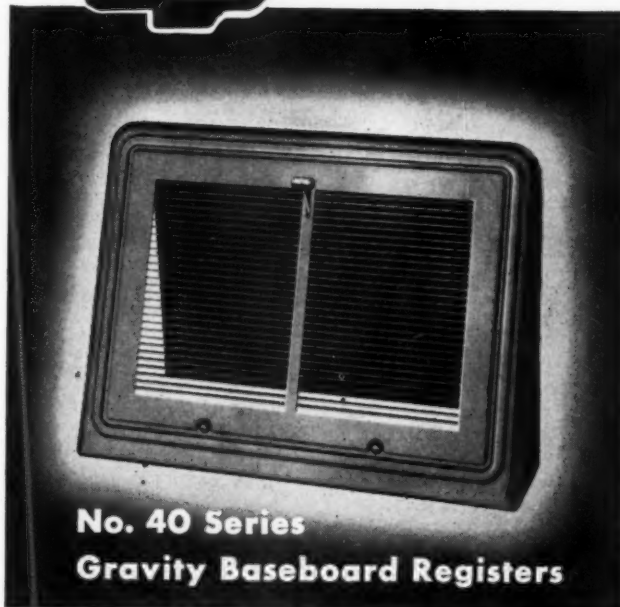
Calvin C. Kohart, who has been associated with the company for six years, is managing this branch, assisted by Thomas McSweeney and Daniel Wolters.

Alfred S. Kohart has been put in complete charge of heavy oil burners at the New York office and Robert A. Kohart, a recent addition to the firm, will handle the gas equipment.

J. A. Ariano, 136 Liberty Street, New York, New York, has been appointed representative for Illinois Testing Laboratories, Inc., 420 N. La Salle Street, Chicago. Mr. Ariano will represent the complete line of Alnor Instruments on an exclusive basis. He succeeds Walton & Torrey, former representatives.

At a recent meeting of the directors of Calimode, Inc., at their general offices in Atlanta, Georgia, Mr. W. Ralph Morgan was elected President and Treasurer; Mr. Arthur W. Pugsley, Executive Vice President, and Mr. William R. Morgan, Jr., as Secretary.

Mr. Morgan announced the appointment of two (2) new distributors of the Calimode line. Dealers Supply Company of Atlanta was appointed state distributor for Georgia and B. F. Huntley Associates of Winston-Salem as distributor for North and South Carolina and Virginia. The Calimode line is being broadened to include all space heaters and conversion burners in addition to the Calimode Oil Floor Furnace.



No. 40 Series
Gravity Baseboard Registers

MATCHLESS
Beauty
HIGHEST
EFFICIENCY ★

The Highest Quality Baseboard Registers You Can Install for Your Customers are the U. S. No. 40 Series. Nothing equals them.

They can be used for Gravity or Conversion Forced Air Systems—with No. 240 in matched design for side wall outlets.

The No. 40 two-piece construction, with removable center, saves substantially on installation costs. THERE ARE NO LOOSE SCREWS, NUTS, OR OTHER GADGETS TO BE LOST. ONE-HALF TURN of the inconspicuous ENGAGING BUTTONS securely LOCKS the grille section of the frame. Perfect Smooth Valve operation that holds it definitely in set position. Valve can be opened to full 90° if desired.

Save High Labor Costs by Installing the smart lines of No. 40 Series registers. No Lost Time Looking for and attaching Loose Screws.

Send for our latest catalog No. 47 of Gravity Registers, Air-Conditioning Registers.

UNITED STATES REGISTER CO.

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY

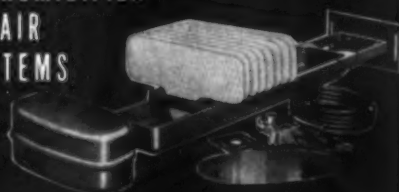
Be A Blower Dealer



Convert any gravity furnace into a modern forced-air heating plant with the Viking Blower Package. Engineered for quick, easy installation... quick, certain profits for you.

ANOTHER Viking PROFIT BUILDER

SERIES 1100 HUMIDIFIER
FOR FORCED AIR
HEATING SYSTEMS



A companion package that makes your conversion job a complete WINTER AIR CONDITIONING SYSTEM. Designed to fit all types of furnaces. Complete data in Bulletin 349.



Viking No. 11 KIT

AUTOMATIC WATER
PAN FILLER FOR USE
ON ANY FURNACE

A complete package. Carry one at all times. Quickly, easily installed. Helps make an inspection trip a profitable call.

Viking

AIR CONDITIONING CORP. 5600 WALWORTH AVE.
CLEVELAND 2, OHIO

With the Manufacturers

At a stockholders meeting of the Williamson Heater Company all the Directors were reelected and the following officers were appointed: W. L. McGrath, president; L. B. Murphy, executive vice president; P. E. Mertz, secretary-treasurer; Frank E. Kise, vice president and general sales manager; G. Leytze, vice president and general works manager, and G. W. Denges, vice president in charge of product development.

Livingston, Inc., of Marshall, Michigan, has announced the publication of a new price list that covers original castings for Rudy furnaces. These parts are available only from Livingston since they have purchased the patterns from Rudy.

Two new sales districts have been established by the L. J. Mueller Furnace Company of Milwaukee, namely, the Central District and the Northern District. The sales manager for the central district is Robert M. Rosebrough, who has been with Mueller for 34 years. He is assisted by his son, J. S. Rosebrough, a 17-year veteran with the company. The central district consists of Missouri, Kansas, Nebraska, Colorado, western Iowa, southern Illinois, southwestern Indiana, western Tennessee and most of Kentucky, Arkansas and Oklahoma are temporarily included.



R. M. Rosebrough

R. D. Hearne is the manager of the northern district and his headquarters are at the main office in Milwaukee. That territory includes Wisconsin, Minnesota, central and eastern Iowa, northern Illinois and northwest Indiana.

Four appointments have been made in the managerial ranks of the Ceco Steel Products Corporation, manufacturers of metal building materials with general offices at 5701 W. 26th Street, Chicago 50.

Lester R. Wise was recently named manager of the Chicago district office of Ceco's Merchant Trade Division with headquarters at 5701 W. 20th St., Chicago 50.

Bernard H. Lord, former Chicago district sales engineer, has been appointed district manager of Ceco's New Orleans office.

Walter E. Lord has been named district manager of Ceco's Milwaukee office. Walter Lord was formerly associated for 27 years with the Concrete Steel Company of Minneapolis. He replaces W. O. Richards, who has been promoted to the post of assistant manager of the Chicago district office.

The C. A. Olsen Mfg. Co., of Elyria, Ohio, manufacturers of Luxaire heating and air conditioning equipment have started production of 275 gallon capacity fuel oil storage tanks.

Constructed of heavy gauge steel, all seams are welded by a new method of automatic, submerged arc welding. This method produces deep penetrating, non-porous, leak-proof welds.

Complete details can be obtained by writing to the Olsen Company.

With the Manufacturers

Bryant Heater Company has opened a new branch office in Cleveland that will handle the distribution of Bryant products in the northeastern Ohio area. Phil D. Bertholf has been named manager of the new branch. He was transferred to this new job from the main Bryant plant in Cleveland where he handled allocation of products to distributors since 1945. Prior to that time he had been at the London Road plant of the company assisting in the war building program. Mr. Bertholf has been with the Bryant sales organization since 1937.



Phil D. Bertholf

J. J. McCarthy has been named as representative of the Nu-Way Corporation for the New England states. He will be in charge of distribution of the Nu-Way oil burner thruout the territory.

Formerly a heating sales engineer and with more than 23 years of experience in the field, Mr. McCarthy is well known to the members of the industry in his territory.



J. J. McCarthy

The Dodge-Chicago plant, 75th and Cicero, Chicago, Illinois, now home of the controversial "Tucker '48," will be the scene of a Machine Tool Show sponsored by the National Machine Tool Builders' Association of Cleveland. The show will open on the 17th of September and run until the 26th.

This is the first such exhibition in twelve years and will feature 12 acres of new products of more than 250 leading manufacturers.

Arr-O-Line Company has changed its corporate name to A. D. Hamphill Company and moved its executive offices from Minneapolis to Lake City, Minnesota. The change in office location was made to coordinate the operation of the executive and manufacturing branches.

A change has also been made in their trademark and it is now spelled "Arrow-Line."

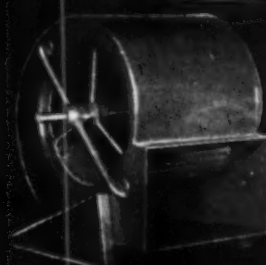
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Other directors of the company are Col. W. F. Rockwell, W. F. Rockwell, Jr., H. C. Stuckeman and F. R. Musrush.

MANUFACTURERS!

Viking

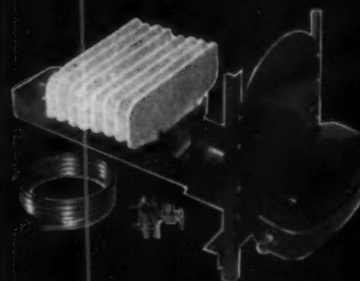
EFFICIENCY



Puts Quality in Your Furnace

Viking Blower assemblies are recognized by the entire industry as the most efficient, trouble-free unit ever developed. And, the complete unit costs less than one you, as a furnace manufacturer, could build or assemble yourself.

Viking Dependable Humidifiers Add Winter Air Conditioning to Your Furnace



SERIES 1300 FOR POPULAR SIZED FURNACES

A complete float operated humidifier especially designed for small plenum installations. Incorporates the famous Viking Top Seat float valve for longer, trouble-free service under all conditions. Bulletin 349 contains complete data.

Write Today for Viking BLOWER CATALOG

Contains complete specifications on blower units for any size furnace at any capacity.



Viking

AIR CONDITIONING CORP. 5600 WALWORTH AVE.
CLEVELAND 2, OHIO

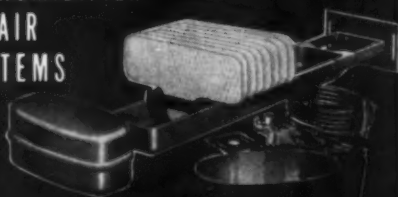
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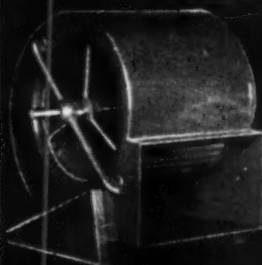
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MANUFACTURERS!

Viking

EFFICIENCY

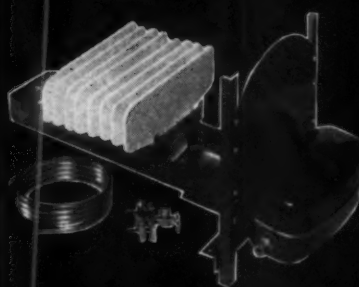


Puts Quality
in Your Furnace

Viking Blower assemblies are recognized by the entire industry as the most efficient, trouble-free unit ever developed. And, the complete unit costs less than one you, as a furnace manufacturer, could build or assemble yourself.

Viking Dependable Humidifiers

Add Winter Air Conditioning to Your Furnace



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FOR POPULAR
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A complete float operated humidifier especially designed for small plenum installations. Incorporates the famous Viking Top Seat float valve for longer, trouble-free service under all conditions. Bulletin 349 contains complete data.

Write Today for
Viking
BLOWER CATALOG

Contains complete specifications on blower units for any size furnace at any capacity.



Viking

AIR CONDITIONING CORP. 5600 WALWORTH AVE.
CLEVELAND 2, OHIO



**ATTRACTIVE AND
DEPENDABLE AVAILABLE
EFFICIENT NOW!**

**PRICES ARE RIGHT
DELIVERIES ARE IMMEDIATE
FRANCHISES ARE AVAILABLE**

Five Sizes — Bonnet Deliveries—
80,000 — 100,000 — 135,000 — 165,000
and 200,000 B.t.u.

We are now back in full production
in our brand new factory building —
making more and better SUN Fuel-
Master Automatic Oil Furnaces than
ever before.

NEW SIX-PAGE BROCHURE NOW READY.

J. V. PATTEN COMPANY
Sycamore, Ill.

With the Manufacturers



Front row: Bill Lohrey, Ernie Wolford, Lee Gillespie,
Harold Faulkender, Gordon Kinsman, Ed Lau
Back row: Orin Sommers, John Burrows, Tom Byrd,
Jim Lutzinger, Jim Wallace, Joe Kilian

A three day meeting of the Blower Division salesmen of The Lau Blower Company was held in Dayton on June 9, 10 and 11 immediately following the National Warm Air Heating and Air Conditioning meeting at Chicago. It was held at this time so that all of the salesmen could be fully acquainted with latest activities and decisions of the association's Board of Directors and technical committees.

Panel heating with warm air was thoroughly discussed with the idea that each salesman talk with his customers about arranging for an installation in every community of any size, to better acquaint the public with the benefits of this type of system compared with other methods of radiant heating.

Modernized winter air conditioning was next on the agenda and a program for future promotion of this idea was outlined.

The Industrial Department of Dravo Corporation, Pittsburgh, opened a Chicago office, effective July 1, to handle sales and service of Dravo Counterflo direct fired heaters for commercial and industrial heating and Dravo Crane Cab Coolers for air conditioning crane cabs in steel mills, foundries and chemical plants.

The Chicago office covers northern Illinois and the industrial districts of northwest Indiana. T. W. Eshbach, who has been active in the heating and ventilating business since 1923, is in charge of the new branch office located at 208 S. La Salle Street.

The employees of the Janitrol division of Surface Combustion Corporation, Columbus, Ohio, decided that their pride in their work demanded that their families see what type of products were turned out by this particular plant. As a result they put in many hours of cleaning work areas, painting and shining machines in order to put on a three hour display of the products of Janitrol and the processes that were needed in making those items.

Nearly 2,000 persons visited the exhibit in its brief three hour existence, perhaps constituting some kind of a record for a display of this type.



Fiberglas* Mop Yarns **IN READY-MADE MOPS** **OR FOR** **YARN REPLACEMENT**

Now you can get Fiberglas advantages in ready-made mops (names of manufacturers furnished on request) or in skeins for replacement. There's a size to meet your needs.

Fiberglas Mop Yarns won't char, burn or rot—last up to 15 times longer than organic yarns. They "thaw out" in two or three minutes after previous uses—and won't catch on fire when left on the job.

Get complete information on these easier-to-use, moneysaving mops and yarns now. Write: Owens-Corning Fiberglas Corp., Department 930, Toledo 1, Ohio. Branches in principal cities.

In Canada: Fiberglas Canada Ltd., Toronto, Canada

OWENS-CORNING
FIBERGLAS
INC. REG. U.S. PAT. OFF.

MOP YARN

*Fiberglas is the trade mark (Reg. U. S. Pat. Off.) of a variety of products made of or with glass fibers by Owens-Corning Fiberglas Corporation.

AMERICAN ARTISAN, August, 1947

**Get ready for easier,
more profitable
installations...**

by stocking up on

Mueller Climatrol Standard Fittings

Saves time

Cuts costs

Protects profits

Yes — you can do all that and be sure of a satisfying installation, when you use Mueller's patented standard duct systems — the key to a successful heating season! Your busy months are just ahead. But there is still time to stock up on these "tailor-made" fittings that simplify your job, save your customers money, and protect your profits.

You save profits because you know your net cost for materials in advance. There are no "extras" afterwards to cut into your margin.

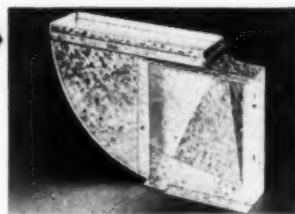
You save time because material is delivered ready to install. It is quickly assembled. No balancing after installation.

You save costs because you use less material. Installation is simple — can be handled by any competent workman.

Mueller Climatrol standard fittings are ready for immediate delivery. Get your order in today to be sure of adequate supply. Then plan to install Mueller Climatrol standard duct systems on every forced air job — for increased profits. And don't forget to use Mueller Climatrol fittings and pipes for gravity installations too!

Write for bulletins

Mueller's patented take-offs save 2 inches at each side-branch take-off. This take-off may be installed within standard joist spaces . . . gives smaller, neater trunk lines . . . requires less material.



D-83

MUELLER

Climatrol
Reg. U. S. Pat. Off.

L. J. Mueller Furnace Company

2010 W. Oklahoma Avenue

Milwaukee 7, Wisconsin

With the Manufacturers

Viking Air Conditioning Corporation of Cleveland has added T. J. McIntyre to its sales staff in the course of enlarging its organization. Mr. McIntyre has experience in working with dealers that will be valuable to the jobbers he supplies with humidifiers and blowers.

The territory that he will serve includes Indiana, southern Illinois and Missouri.



T. J. McIntyre

George J. Stanley, vice president and general sales manager of the Aluminum Company of America, recently retired from those positions although he continues as a director. This retirement marked the end of 42 years service with Alcoa and a company that preceded it.

Ralph V. Davies, Robert B. McKee and Donovan Wilmot, assistant general sales managers of Alcoa, were elevated to vice presidencies, with Mr. Davies also succeeding Mr. Stanley as general sales manager. All three of these men are members of the Alcoa "25-Year Club."

The Lawson H. Yates Co., 701 Third National Bank Bldg., Nashville, has been appointed representatives in the southeastern states for the warm air furnaces of Certified Furnace Company, St. Paul.

As an established manufacturers' agency, Yates represents a number of manufacturers of heating equipment and supplies. They service the jobber level of the trade.



Lawson H. Yates

The rapid expansion of home building and industry in Montana has led the Minneapolis-Honeywell Regulator Company to open an office in Butte. James A. Reynolds has been transferred from the Seattle office to serve as manager of the Butte branch. The territory served includes Helena, Missoula, Bozeman, Anaconda, Cut Bank and Shelby.

Another branch office opening took place in Fresno, California, with Clyde N. Bradley from the San Francisco office taking charge of the new office.

An expansion of office facilities took place in the Chicago office, where the Chicago regional office of M-H and its industrial division, the Brown Instrument Company, has moved to a new location with three times the amount of space formerly occupied. 351 E. Ohio Street, is the new address.

INDEPENDENT "Fabrikated"

REG.
U. S.
PAT.
OFF.

REGISTERS AND COLD AIR FACES

"Fabrikated" products were originated by Independent and are backed by 47 years' experience in the register field.

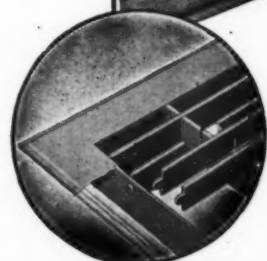
Standardize with Independent "Fabrikated" floor faces and registers. You will have a source of supply of proved dependability. Complete information will be supplied to you gladly on request.

THE INDEPENDENT REGISTER CO.

3747 E. 93rd ST.,
CLEVELAND 5, OHIO



ALWAYS
LEADING...
ALWAYS
PROGRESSING



Blac
too t
Fast
strai
tion
up to
gage
in cop
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Distri
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LEA

7

AMERIC

ZIP

Through Sheet Metal Work

with Black & Decker
Porto-Shears*

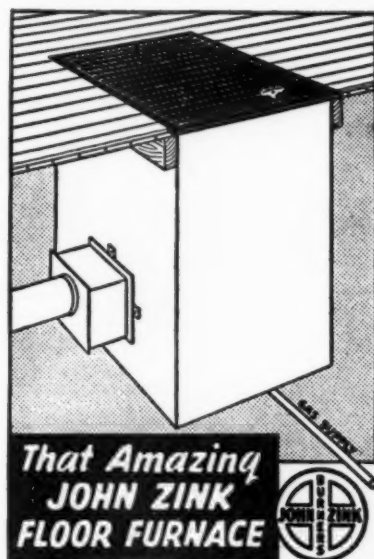


Black & Decker Electric Porto-Shears cut sheet metal too tough for snips, speed up jobs where snips are slow. Fast, powerful shearing action eliminates hard muscular strain. Easy to follow patterns because cutting operation is always visible. B & D 16-Gage Porto-Shears cut up to rated capacity in steel or galvanized iron; about one gage thinner in Monel or stainless; 50% above rating in copper, aluminum, lead and other non-ferrous metals.

For full information on cost-cutting Porto-Shears . . . and other Electric Tools for heating, piping and air conditioning work . . . see your nearby Black & Decker Distributor. For your free copy of our complete catalog, write to: The Black & Decker Mfg. Co., 682 Pennsylvania Ave., Towson 4, Maryland.

LEADING DISTRIBUTORS  EVERYWHERE SELL

Black & Decker
PORTABLE ELECTRIC TOOLS



THE FLOOR FURNACE THAT FEATURES . . .

- ★ EFFICIENCY
- ★ QUIETNESS
- ★ ECONOMY
- ★ DURABILITY

One large gas port, eliminates burner stoppage. Large full length combustion chamber giving uniform warm air temperature without overheat. Proper design makes possible a light air hood which is easily removed for cleaning the furnace. The gas burner is a pre-mix type, made of high grade cast iron, equipped with a pilot light. Automatic controls are available.

"Burns Any Fuel Gas"

Write for Literature

John Zink Company

4401 South Peoria

TULSA, OKLAHOMA

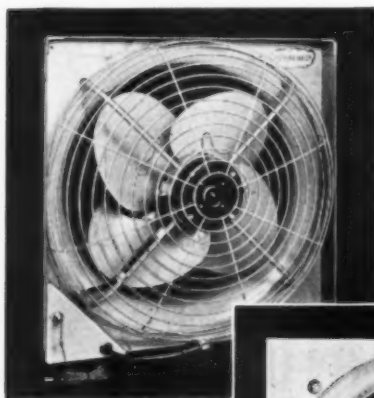
New York — Salt Lake City — Houston — Los Angeles

Fresh-Air-Maker

direct driven

Exhaust Fans

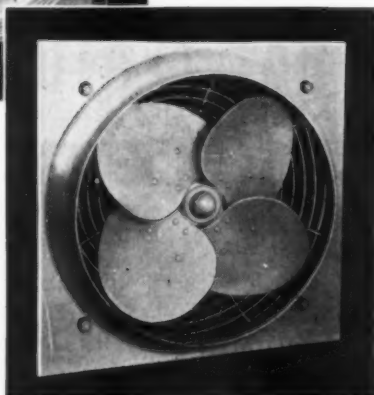
★ ★ ★ Three fine models—12", 16", 20" have been added to the famous Fresh-Air-Maker line



and are ready for immediate delivery.

★

• 12"
• 16"
• 20"



All 3-SPEED fans—fine performers with high air delivery and surprisingly quiet operation. They are attractive in design and beautifully finished all over in ivory. Complete with cord and plug and convenient 3-speed pull switch so fan can be located high up and speed controlled if desired. Wire guards and manually operated louvers optional.

FRESH-AIR-MAKER, QUALITY • MATERIAL • WORKMANSHIP • PERFORMANCE • PRICED RIGHT

★

WRITE FOR PRICES — IMMEDIATE DELIVERY
New Literature

SCHWITZER-CUMMINS

Ventilating Division

1145 E. 22nd STREET • INDIANAPOLIS 7, INDIANA

• BLOWERS
• VENTILATORS
• BLOWER WHEELS

With the Manufacturers

in observance of the 75th anniversary of the founding of the firm, Alexander Grant and Son, Inc., of Springfield, Massachusetts, developed a colorful catalog which illustrated some of the machines and men that they use to produce sheet metal products.

Titled "The Shape of Things to Come," it does an effective public relations job showing the officers of the company and a recent expansion of plant facilities as well as the above-mentioned coverage.

Robert L. Sanford is Eastern District Manager for the Heating and Appliance Division of Evans Products Company, Plymouth, Michigan. His territory will include northeastern North Carolina, Virginia, Delaware, New Jersey, eastern Pennsylvania, New York and the New England states.

That midget wonder, the Jet-Heet furnace, has recently won the support of the American Research and Development Corp., an investment organization designed to promote products that benefit the general public. This Jet-Heet unit has received some rather sensational publicity and was discussed in the January, 1947, *AMERICAN ARTISAN*. (It is a small, high-temperature, high velocity air, oil-burning furnace.)

Eventually production will include models that range in size from a one- or two-room capacity up to nine rooms.

The Century Engineering Corporation of Cedar Rapids, Iowa, has announced the appointment of nine new sales representatives in various territories throughout the country. Some of these men have previously been with the Century organization, while others are recent additions to the staff. All, however, have had previous experience with oil heating equipment.

The headquarters of the various representatives and the territory they will service are as follows:

Chicago—Ray F. Considine, Wisconsin and Illinois.
Brookline, Mass.—Noel M. Edwards, New England States.

Saginaw, Mich.—W. E. Haynes, Michigan and Indiana.

Baltimore, Md.—Lowell Madden, Southeastern Territory.

Freeport, Ill.—Asa H. Mellott, Installation and Service Sales Engineer.

Columbus, Ohio—Ohio Manufacturers Sales, Inc., State of Ohio.

Seattle, Wash.—Samuel Spilk, Northwestern States.
Cedar Rapids, Iowa—H. J. Stites, Iowa, Missouri, Kansas and Nebraska.

Mt. Vernon, N. Y.—Paul Stoll, New York, New Jersey and Eastern Pennsylvania.

Preston M. Postlethwaite has been appointed manager of both electrical and automotive divisions of the Wagner Electric Corporation branch at Portland, Oregon. This transfer follows his association with the sales department of the Wagner Branch at Pittsburgh.

In his new position Mr. Postlethwaite will direct the operation of the Portland branch and the distribution and merchandising of Wagner automotive and electrical products in this territory.

PEXTO . . . NOW AVAILABLE . . .

PROMISES SUPERB PERFORMANCE



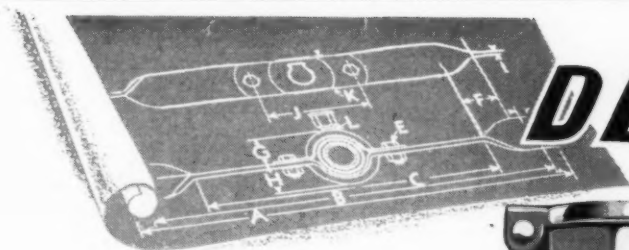
MOTOR DRIVEN
COMBINATION ROTARY MACHINES

With materials again available, production lines going strong, and really worthwhile refinements in design and performance, PEXTO offers the finest quality in Sheet Metal Working Machinery and Tools.



SCROLL SHEARS

THE PECK, STOW & WILCOX COMPANY Since 1785 SOUTHTON, CONNECTICUT, U. S. A.



DESIGNED for Air Conditioning

This shock-absorbing pillow block was designed by air conditioning engineers for fans, blowers and other devices requiring **silent operation, perfect alignment, self-lubrication,** and **minimum obstruction to air flow.** No other bearing provides all of these advantages.



Shown here is one of several types of mountings. We are glad to cooperate with engineers in designing mountings to meet their specific needs. Tell us your problems and we will send other types of mountings, specifications and complete information.

TRIANGLE MANUFACTURING CO.
392 Division St. Oshkosh, Wis.

With the Manufacturers

John R. Collette is manager of field sales for the Fitzgibbons Boiler Company, Inc., of New York. Mr. Collette has been in the heating business for many years and had been in the sales promotion field before entering the heating field.

His initial task at Fitzgibbons will be to coordinate the sales activities of more than sixty sales branches and representatives under a new department to be known as the "Field Sales Division." The company has announced the formation of this division as the latest step in an expanded sales program.



The Coleman Company, Inc., of Wichita, Kansas, has announced the availability of a pocket size slide rule for quick estimates of building heat loss. Basic data for the rule was compiled from the actual heat loss calculations of more than 2,000 typical small homes.

A nominal charge of twenty-five cents is made to partially cover the cost of printing and mailing.

Polo Pump Co. of Polo, Illinois, manufacturers of Polo oil burner fuel pumps, has appointed the Delavan Sales Engineering Co. of Des Moines, Iowa, as sales representative for the following states: Iowa, Nebraska, Minnesota, North Dakota and South Dakota.

B. A. Johnson, formerly of Minneapolis-Honeywell Regulator Company, has joined the Condensation Engineering Corporation, manufacturers of Vitroliner Chimney Liner, Breeching Pipe and the Vitroliner Chimney. He will become active in administrative and consulting work with E. O. Howle, president of Condensation Engineering, as well as with Barney Olson, Inc., one of the oldest manufacturers' representatives and service organizations for gas equipment in the Chicago area. Both companies are located at 122 S. Michigan Ave.

Prior to joining Honeywell in 1942, "B. A." was associated with the Peoples Gas Light and Coke Company as a staff engineer and later its sales engineering manager in the Domestic Sales Department, where he became widely known for his work on gas heating equipment problems. He left Peoples Gas to work in a Chicago war plant operated by Honeywell. There he soon became its chief engineer and after V-J Day moved to Minneapolis to become assistant to the engineering vice president.

Timken Silent Automatic Division of The Timken-Detroit Axle Company recently announced the completion of a series of Dealer Management Meetings in the field.

A total of more than 750 dealers and their key executives attended 3-day business sessions at Chicago, Philadelphia and Boston.

Purpose of the meetings was to give dealers first-hand information on market trends in relation to their effect on the oil burner business, current and future outlook for product deliveries, and to bring all dealers up-to-date on the company's new methods of hiring and training sales and service personnel.

The attention to detail that marks....



CRAFTSMEN

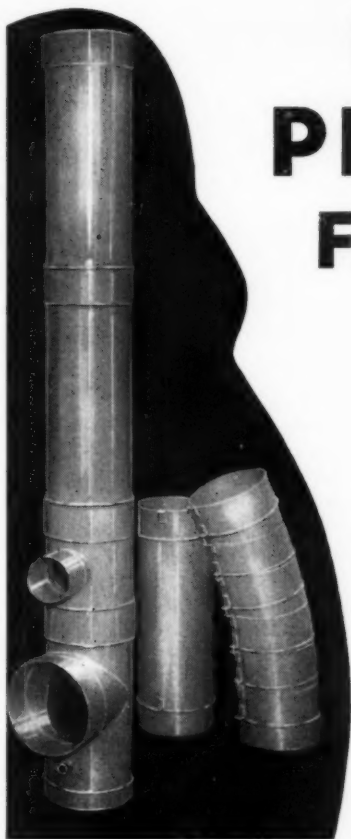
You'll find none of the sloppy workmanship that characterizes so many products today . . . none of the "that's good enough" attitude . . . here at Brundage. Brundage Blowers and Package Units are made to the same high standards by the same high class craftsmen that have always made Brundage products the fine products of the field. When you want the quality that means longer life and lower operating costs, specify Brundage Blowers and Package Units.

THE
Brundage
COMPANY

Blower Specialists
Since 1919
KALAMAZOO 11,
MICHIGAN

EXTRA PROFIT For You

Install VITROLINER CHIMNEY LINING PIPE



Dealers—You can quickly build up a thriving business lining old or new masonry chimneys—ideal for gas or oil fired heating plants where protection against acid bearing condensation is important.

VITROLINER insures longer life to the chimney—increases stack temperature (heats and cools quickly) providing better draft to carry gases out of chimney.

VITROLINER is made of heavy gauge steel completely coated inside and out with acid resisting porcelain fused into the steel at 1575° F. to prevent corrosion. VITROLINER drains the condensate harmlessly away into the ground preventing deterioration of brick work.

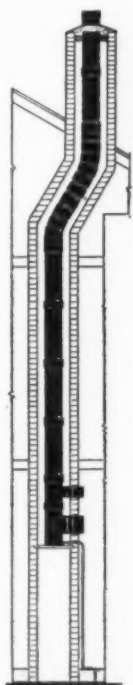
VITROLINER can be installed in a few hours. It will correct DEFECTIVE LINING, SMOKE BACK, LEAKY BRICK JOINTS, and POOR DRAFT.

VITROLINER has been used for the past 18 years and is proven through a long field record.

DEALERS WANTED

We invite correspondence from reliable dealers who can contact and service installations in cities. Write today for literature and prices.

CONDENSATION ENGINEERING CORPORATION
122 S. MICHIGAN AVE. CHICAGO 3, ILL.



PROFIT MAKER! the NATIONALLY ADVERTISED



Palmaire SUSPENDED UNIT GAS HEATER

100,000
and
190,000
BTU sizes
AGA
approved

Proved dependable
Palmaire heaters
make for quick sales
... fast turnover ...
low selling cost! Both
you and the customer
receive maximum
satisfaction when you
stock Palmaire. NOW
is the time to order
for greater fall and
winter sales. Write
today!



7 SALES-PULLING FEATURES BRING CUSTOMERS IN TO BUY

1. Requires no valuable floor space—hangs from ceiling without duct work
2. Fully automatic—set it, forget it
3. Delivers maximum heat fast with whisper quietness
4. Rugged construction — built to exacting specifications for long life
5. Perfect for store or factory
6. A G A approved for natural, L P G, or manufactured gas
7. Gas heat is clean heat—tends itself without ashes or dirt

Write for
descriptive
literature

Palmer
MFG. CORP.
Phoenix, Arizona

With the Manufacturers

Allied Appliance Company and York-Shipley, Inc., were co-sponsors of a one-day York-Heat retail selling clinic during the month of June at Boston's Hotel Sheraton. More than 200 New England dealers of York-Heat gathered to hear factory and distributor executives outline the merchandising program for the coming year.

The session was under the supervision of Mitchel Landau, heating division manager for Allied Appliance, York's New England distributor. Speakers included Lester O. Stearns, general manager of York-Shipley; Arthur V. Padou, district manager, and Jack Adams of W. H. Long Co., York-Shipley advertising agency.

Darcey U. Wright, a veteran of two decades in the domestic and industrial oil burner business, has been appointed district representative of the Williams Oil-O-Matic Division, Eureka Williams Corporation, Bloomington, Illinois.

His territory includes Utah, southern Idaho, western Wyoming, eastern Nevada, western Colorado and northern Arizona. His headquarters will be in Salt Lake City, Utah.

A major portion of Mr. Wright's experience in the oil burner business was with the Red Feather Oil Company, Salt Lake City. He was co-owner of the company, sales manager, secretary, treasurer and a director.

There has been a recent increase in activity among sheet metal shops in the Los Angeles area. Paul Sherman has started construction of a sheet metal shop, office and display room at 4103 W. Jefferson Blvd., Los Angeles; Glenn Williams is building a sheet metal plant at 176 Court St., San Bernardino, and William Gardner is putting an addition on his shop at 1800 San Pedro St., Los Angeles.

Two new firms have entered the field: Laurence Murdock and Joe Shuster publishing a certificate that they are operating the S. & M. Sheet Metal Works at 635 Front St., San Pedro, and Eli Monty Jr. and Kenneth Kolp are operating the K. & M. Sheet Metal Works at 1632 Pier Ave., Redondo Beach.

Jones and Brown, Inc., 439 Sixth Ave., Pittsburgh, Pa., is now the national distributor of Ko-Z-Aire Weather Conditioning units, manufactured by the Ko-Z-Aire Mfg. Co. of Red Oak, Iowa. The manufacturing company was founded in 1890 and has devoted all its energies to the manufacture of the units named.

As national distributors Jones and Brown will handle all sales for the continental United States.

R. H. Reeder is now sales manager of the Duo-Therm division of Motor Wheel Corporation of Lansing, Michigan. Mr. Reeder has been with Duo-Therm for ten years and had previously been Eastern district manager.

E. M. Cray, former district manager in the Southwest, has been appointed assistant to Mr. Reeder. Mr. Cray is a veteran with Duo-Therm, having been with the sales department since 1929.

Summer or Winter IT'S BURDEN BLADES

*The Blade that's
Electronically Balanced*

WHETHER for breeze fans, refrigerators, air conditioners or forced air heaters, manufacturers have found Burden Blades meet rigid requirements.

Burden Blades are made of aluminum for light weight and less horsepower consumption. They're highly polished for attractiveness. They are quiet, smooth running, efficient. And they are perfectly balanced by the new Burden electronic balancer that assures the qualities you demand in better impellers.

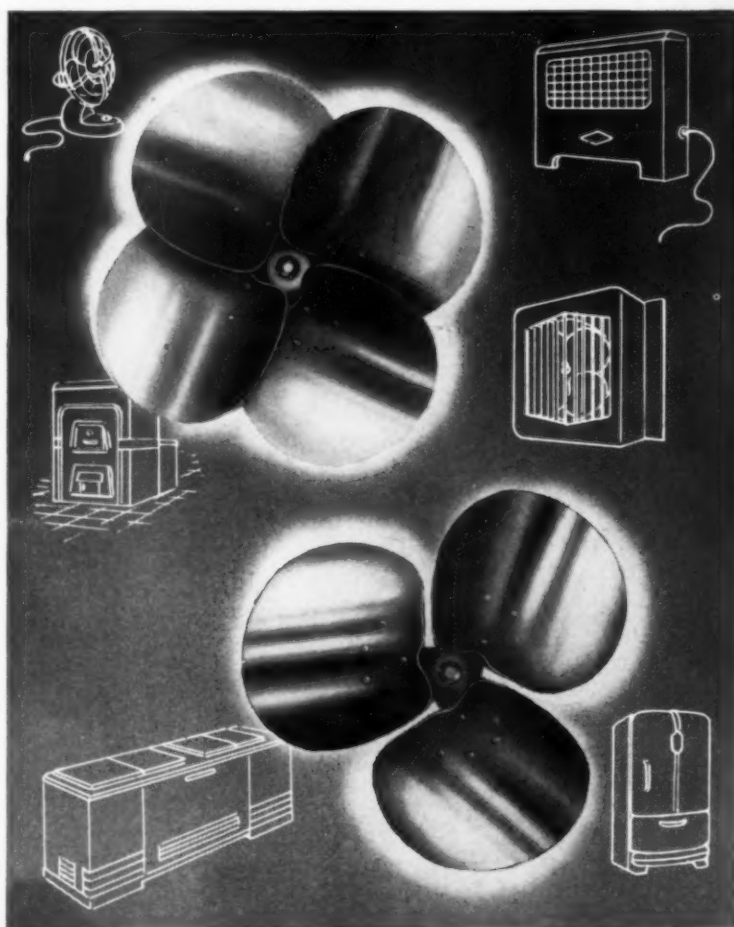
Whatever your impeller need — for summer or winter — use the scientifically balanced Burden Blades.

Write Today for Literature

burden COMPANY

1000 N. ORANGE DRIVE, LOS ANGELES 38, CALIFORNIA

Canadian Representative: SILVER BROTHERS CO.
7-11 Mary Street Hamilton, Ontario



**DON'T TAKE
CHANCES
WITH
CUSTOMER
GOOD WILL**



When you specify Rudy Lifetime Oil Heat Air Conditioners you not only buy the finest equipment of its kind but you buy customer good will through satisfaction in the form of long life, trouble free service, high efficiency and economy of operation.

Units employing the same Rudy pioneered counter flow design, of cast "Lifetime" construction, are now coming off the assembly line at greatly reduced prices.

Send for details today.

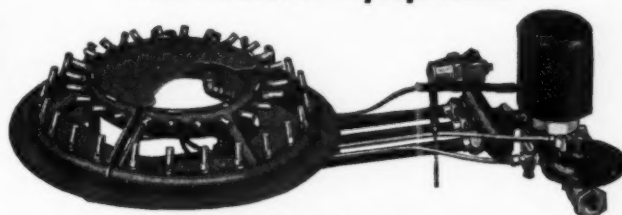


**OIL, GAS and
COAL FIRED
FURNACES**

**RUDY FURNACE COMPANY
DOWAGIAC, MICHIGAN**

BARBER Conversion Burners

— Get the Most from
The Present Equipment



No. 324-B Barber Burner



No. 47-1088
Barber Burner



New, untried gas conversion burners spring up (and also die out) overnight. Don't be misled by the confusion of claims for these products. Don't let somebody else gamble with your reputation.

Why use a gas flame to heat a refractory, to heat in turn a fire-pot—when you can heat the fire-pot **DIRECT** with a Barber Conversion Burner? Barber's controlled flame action scores a direct hit on the combustion chamber the first time, without any intermediate elements, and the flame thoroughly "scrubs" all heating surfaces. Barber patented air-activated jets produce the hottest flame attainable on natural atmospheric pressure. That means efficiency—the most from the equipment, the most from the fuel.

Barber Conversion units, round or square, are made for all types of furnaces, also steam or hot water boilers, in a wide range of sizes, and are further adjustable so that they correctly fit the existing equipment. When the owner already has automatic controls, these are usually adaptable to a Barber installation. Get the conversion burner that's custom-built to suit the job—a genuine Barber.

● Write for Catalog illustrating and listing many types of Burners for Appliances, Gas Conversion Burners for Furnaces and Boilers, Regulators, etc.

THE BARBER GAS BURNER CO.

3704 Superior Avenue

Cleveland 14, Ohio

BARBER BURNERS

NEWS SUMMARY OF THE MONTH

(Continued from page 63)

Roofing Drivers Raise

WAGES of 100 members of Chicago's local 786, AFL Building Material Insulation and Roofing Drivers' Union, who deliver roofing materials to jobs, tend tar kettles and hoist roofing materials to roofers, have been raised from \$14.10 a day to \$17.62½. A new contract had been signed by the union and the Chicago Roofing Contractors' Association.

Labor Supply

THE Bureau of Labor Statistics reports that during February, 1947, a total of 1,165,000 mechanics were employed in on-site construction. About 399,000 mechanics were engaged in private residential construction, 54,000 in public residential building, 392,000 in private non-residential construction.

The Bureau forecast that construction labor requirements in 1947 will probably exceed the 1946 peak when 1,800,000 workers were employed on new on-site construction. The Bureau reports a total of 93,636 apprentices in all crafts in training in February, with four trades registering an increase in apprentices—sheet metal worker apprentices increased by 199.

"Belo" Work Week Pay Method

RECENTLY there has been placed in operation by a number of large concerns the so-called "Belo" method of paying employees. Under this system the employer agrees to pay a flat guaranteed weekly salary for a work week jointly agreed upon by the employees and the employer. This work week salary includes both straight time and over time at agreed-upon rates per hour. Under this system, if the employee works longer than the agreed-upon number of hours, he then receives overtime pay at an agreed-upon rate. In most cases, this overtime rate is approximately one and one-half times the standard rate.

If the employee works fewer hours than the agreed-upon schedule, he is still paid for the full week.

This plan has been approved by the Federal Supreme Court, the court holding that this plan does not violate the wage hour law requirement for overtime pay after forty hours per week. In most of the contracts now in existence, under the plan, the guaranteed salary does not apply to weeks in which the employee is not called into work or is absent because of illness, etc.

This plan probably has little appeal, in fact probably can not be initiated between employers and union labor in our particular industry, but it may have application among employers using CIO labor and even in certain AFL manufacturing businesses where an inside rate has already been established and where labor is anxious to obtain a guaranteed annual pay.

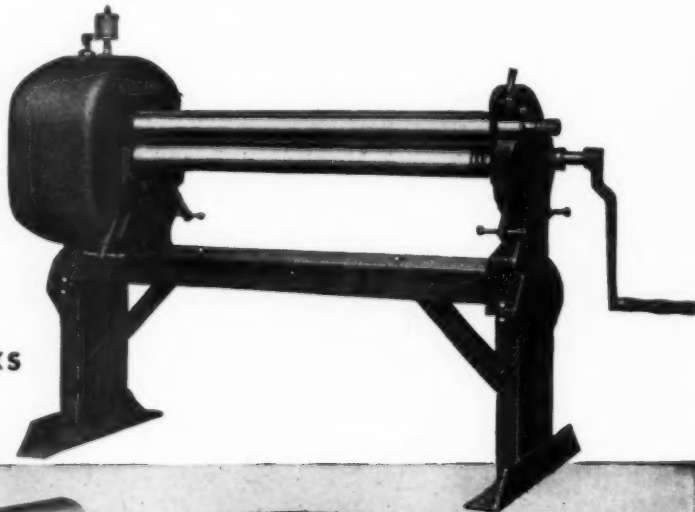
● Sheet metal men make a great many things, including money, with Niagara Slip Roll Forming Machines.

Niagara design makes them easy to operate because the end of upper roll swings forward so that formed cylinders can be withdrawn without distortion. Upper roll opens horizontally, eliminating lifting of roll or work. Trigger release speeds up unlocking, opening and closing upper roll.

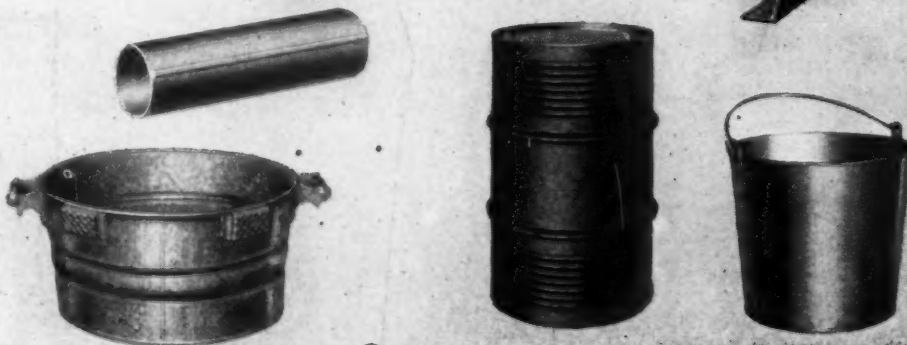
Made in various sizes and capacities,—hand and power operated.

**NIAGARA MACHINE AND TOOL WORKS
BUFFALO 11, N. Y.**

District Offices: New York, Cleveland, Detroit



Typical
Examples
of the
Work Done on
**NIAGARA
SLIP ROLL
FORMERS**



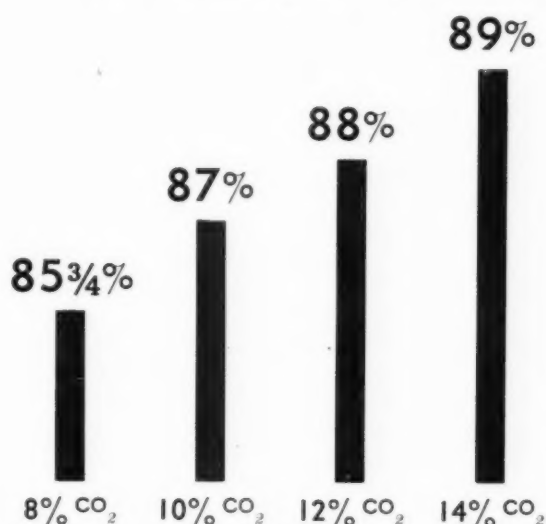
STACK

AVERAGE

300°

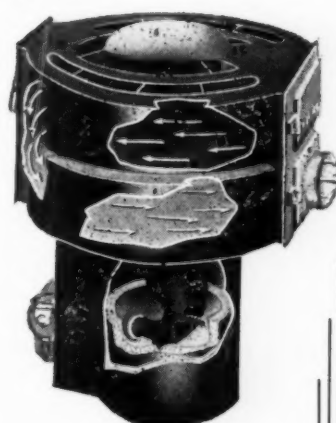
COMBINATION *for* COMPETITION

Efficiency ————— Durability



Beauty

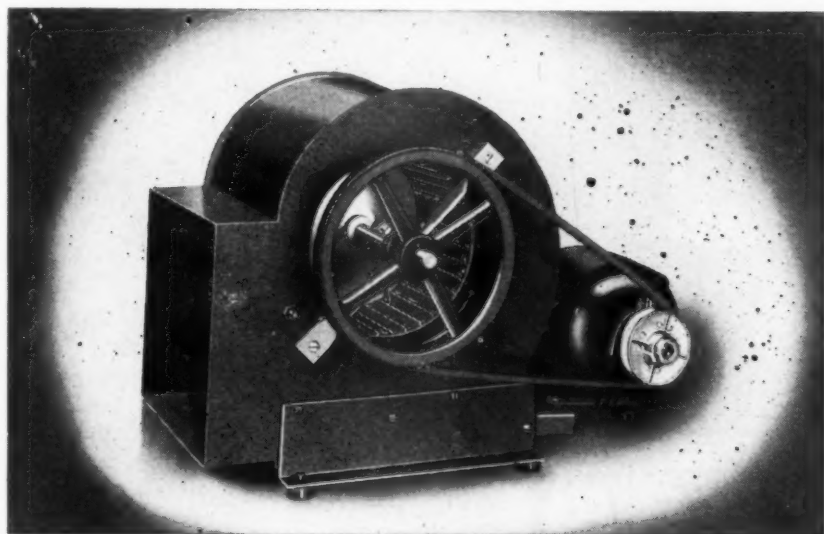
THE PRIDE
of the
TRADE
• •



Exclusive
Dealerships
Available

RADIATION FURNACE CORPORATION

BENTON HARBOR, MICHIGAN, U. S. A.



PERFORMANCE DATA

CFM	Outlet Velocity	R. P. M.		
		1/8" SP	3/16" SP	1/4" SP
600	798	420	500	
700	931	430	510	
800	1064	440	520	580
900	1197	460	530	590
1000	1330	500	550	597
1100	1463	540	565	600
1200	1596	560	590	620
1300	1729	590	620	
1400	1862	620		

The FURBLO 9" BLOWER *for the small furnace*

**SLOW SPEED,
HIGH EFFICIENCY — A
PERFECT BLOWER FOR
CONTINUOUS
OPERATION.**

Here's the answer to continuous air circulation at slow speeds. The Furblo 9" blower is equipped with our new perfected wheel which makes constant operation possible without air noises and other hazards encountered in speeding up ordinary blowers to 800 or 900 RPM for a sufficient amount of air. The NWAHACA recommends continuous operation for greater comfort and efficiency and you'll find that complying with this idea will result in far more satisfactory installations.

The 9" blower is ideal for small furnace installations. In addition to the slow speed feature it offers additional advantages in rear, top, or side mounting and bottom or top horizontal and top vertical discharge. Discharge can be set at any angle. Check the performance data at the top and see why the Furblo is extremely versatile and adaptable.

Additional information will be sent on request.

FURBLO CO. Hermansville, Mich.

Family Partnership Taxes

WASHINGTON reports indicate that both the Supreme Court and the Treasury Department have recently issued rulings making the family partnership subject to close scrutiny and requiring that a family partnership must meet one of three requirements;

- (a) The relative not an active partner must make an investment of his or her own capital;
- (b) Must make a substantial contribution to the control and management of the firm;
- (c) Must perform vitally needed services in the operation of the business.

In addition to these restrictions, the Treasury Department has recently announced that:

- (1) The capital contribution claimed to be added by the partner must be a needed contribution to the business and it must not have been already available to the company. This may mean that a wife can not use her own capital to buy a half interest in her husband's existing business if the capital is not needed in the business.
- (2) The profit sharing ratio of the partners must be reasonably related to the services rendered and the capital contributed; thus a wife or child in a family partnership contributing half the capital, but giving no services, probably will not be recognized as entitled to an equal division of the profits.

- (3) Treasury states that the partnership agreement drawn up must not prohibit a partner's activity in the management of the firm, or the distribution of control of its assets; if the agreement does not mention this requirement, the Treasury is likely to be suspicious.

AMERICAN ARTISAN recently has called attention to numerous new regulations covering family partnerships and in view of the fact that so many such partnerships exist in the industry, it is suggested that all such partnership agreements be closely scrutinized for compliance with the Treasury ruling.

Our National Wealth

RECENT economic forecasts show continued scarcities of steel amounting to perhaps four million tons per year, scarcities of pig iron of perhaps 100,000 tons per month, and scarcities of copper, lead, tin, antimony, and many types of chemicals have served to highlight the fact that United States may shortly become a "have not" nation because during the war we swallowed huge chunks of our natural resources.

At the present moment, it looks as though we will have more than sufficient magnesium, nitrogen, coal, aluminum and a few other materials, but we are facing decreasing supplies of petroleum, lumber, iron ore, copper, lead, zinc, chromium, gold, and a long list of special critical materials.

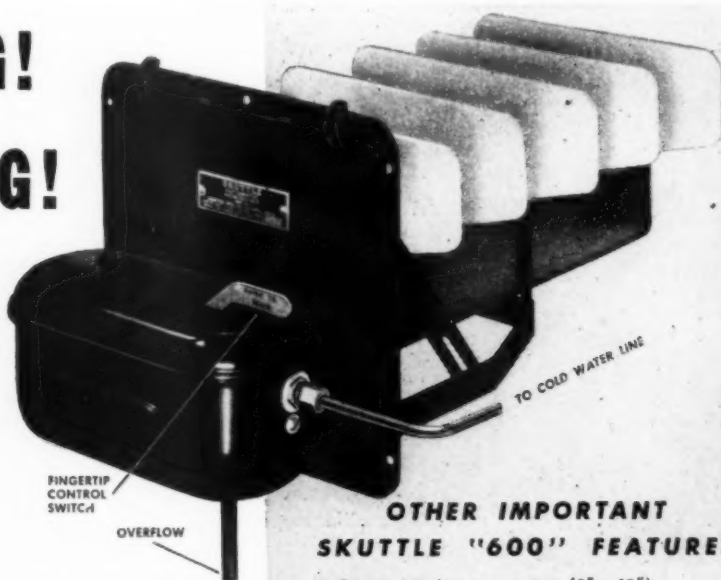
Self FLUSHING! Self CLEANING!

AUTOMATIC CLEANING NOW POSSIBLE IN THE NEW SKUTTLE HUMIDIFIERS

It's TRUE! Skuttle Automatic Humidifiers (Series 600*) are completely self-flushing, completely self-cleaning! All you do is raise the fingertip control switch to flushing position and Skuttle's new exclusive vacuum-controlled cleaning system does the rest . . . flushes the entire unit, drains off all water, sludge, mud and mineral deposits, then automatically trips off to allow unit to refill again to valve adjustment level! No hand scraping required, no clean-out panel necessary! Simple, convenient, foolproof!

New Self-Flushing Float Chambers are also available to rehabilitate existing Skuttle units . . . Series 300, 300A, 500, D.S.

*Patents Pending



OTHER IMPORTANT SKUTTLE "600" FEATURES

- ★ Drawn seamless copper pan (3" x 12").
- ★ Replaceable VAPOGLAS® evaporating plates.
- ★ 5 plates furnished. Evaporating area 316 sq. in.
- ★ Automatic anti-siphon float control valve.
- ★ Collar fits sloping or vertical bonnets.

See your local jobber or write today for state listings and the complete Skuttle story!

Skuttle

MANUFACTURING CO.

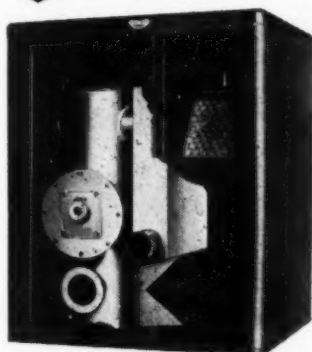
4099 BEAUFAIT, DETROIT 7, MICHIGAN

FRONT RANK OIL BURNING FURNACES

Combine

AUTOMATIC OIL HEAT
WITH WINTER AIR
CONDITIONING

THE
HEATING UNIT

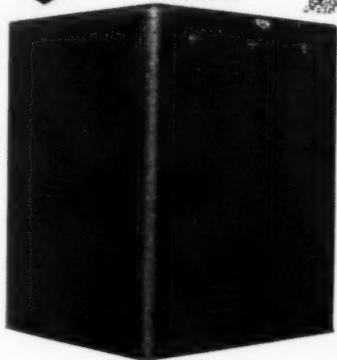


It is the climax of years of careful tests for greater efficiency. Comprises round steel Drum, specially designed Radiator, Blower and Filters and Power Plant all assembled compactly in metal Housing.

THE
NEWLY DESIGNED
RADIATOR

Of an entirely new design as shown. Steel welded throughout with a triple baffling arrangement. Long flue travel affords greatest possible heat absorption. Tests show high efficiency and low stack temperature.

THE
STREAMLINED
CABINET



Finish is green, baked-on enamel. Neat and compact requiring a minimum of floor space. Removable front panel exposes the entire oil burner assembly for service. Side panel gives access to filters, motor, etc., for servicing, cleaning, oiling.

WITH
FRONT RANK

- - you're ALWAYS out FRONT

We recommend this line of Oil Burning Units for greater heating efficiency — for greater prestige and profits. It's the line to sell.

Order from Your Jobber

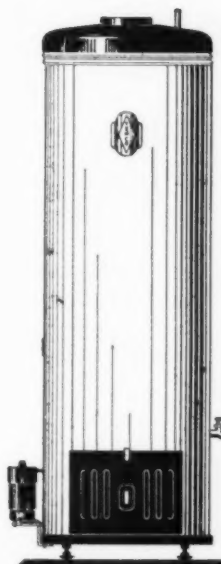
FRONT RANK FURNACE CO.
DIVISION OF LIBERTY FOUNDRY CO.
2500 OHIO AVE., ST. LOUIS 4, MO.

Install DOMESTIC HOT WATER HEATERS AND KEEP CUSTOMERS HAPPY

Fuel Oil
Fired

Extra
Heavy
Gauge
30 Gallon
Tank

Extra
Fine
Jacket
Finish



Exclusive
Smudgeless
PILOT
LIGHT

Operates
All By
ITSELF

Easy to
Install &
Service

WITH EVERY WARM AIR HEATER YOU CAN INSTALL A YEMCO

that is fully guaranteed, fully automatic, no motor, no gas pilot, and so designed that it will supply all year hot water at low cost, with no attention except normal service inspections.

On oil conversion jobs, or on new installations, you can complete the contract with a Yemco water heater.

YORK ELECTRIC & MACHINE CO.
34 NORTH PENN ST.—YORK, PENNSYLVANIA

We are using iron ore at such a rate that the steel industry near the lower great lakes region may have to build plants that can use low grade ore or else move to the East Coast to get imported ores. Similarly, in oil we may become dependent on foreign sources for 40 per cent of our supply within the next few years unless we uncover new techniques. Timber is also decreasing rapidly.

The overall result of this change in our natural resources may require a complete about face in our attitude toward imports and exports; may stimulate the use of substitute materials and new techniques; and may remove from our manufacturing picture many of the materials on which we have depended for generations.

Inflationary Drifts

BUSINESS surveys indicate several factors are focusing their influence on the drift toward inflation in the last half of this year.

Farm products are selling at record highs, bolstering farm income and creating an enormous demand for the products of industry. No relief from present food prices is in the offing because they are supported by foreign purchases and governmental purchases for foreign commitments. Only bumper crops will take the upward pressure off food; otherwise, business opinion looks for higher food prices.

Heavy industries are getting improvement programs in operation and will compete for large quantities of

steel, machinery and construction products. Industrial and retail inventories have been running out; buyers are again in the market.

New demands for wage increases are in process of negotiation; some have already been met. Easing governmental curbs on installment buying brings new buyers into the market for our productive capacity. Each adds to the demand which is stimulating the inflationary drift.

Most surveys show that present price levels can be maintained only by compensating current wage boosts with greater output per man hour.

Housing Construction

THE administration in Washington has received a bad jolt in the unexpectedly small number of housing "starts" in recent months. The principal cause seems to be the unwillingness of buyers to pay present prices. This particular situation seems difficult or impossible to remedy by legislative action.

According to reports reaching Washington, the cost of building materials reached an all-time high at the end of the first quarter and while some items have reduced in price since the first quarter, the increasing rate of output of many building materials must be relied upon to bring building material prices down.

Congress believes that some headway has been made in the reduction of restrictive labor practices and the cost of financing individual houses, and that even a moderate reduction in the cost of housing will increase sales materially.

Now Only \$2.00 for This Outstanding Book on Air Conditioning

The Third Edition of

AIR CONDITIONING FOR COMFORT

by **SAMUEL R. LEWIS**

288 Pages—6½"x9¼"—Cloth Bound

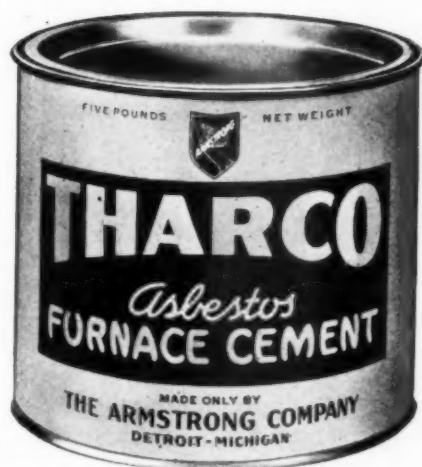
Easy to understand . . . accurate . . . comprehensive . . . these are the features of this third edition of Samuel R. Lewis' well-known AIR CONDITIONING FOR COMFORT.

Fundamentals are fully and clearly covered. Correct procedure in designing complete systems for both residences and large buildings is explained step by step. In addition, considerable original data on such subjects as standards, noise control, measurements, and fire protection codes has been included.

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Air Conditioning by Schwerin Air Conditioning Corporation

Simply designed air diffuser blends with interior

**Provides complete air conditioning comfort
by eliminating drafts, noise, hot or cold spots.**

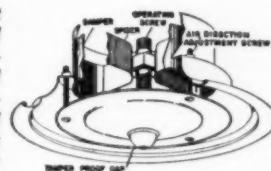
In addition to their unobtrusive appearance, Kno-Draft Adjustable Air Diffusers are specified for installations like the one pictured here in the offices of Schwarzenbach-Huber Co. because they combine all the advantages of scientific air diffusion plus adjustable features which assure positive air pattern control.

Kno-Draft adjustability increases efficiency and economy.

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To those advantages, Kno-Draft adds adjustment features that increase both the efficiency and economy of the air diffusion principle and a simplicity of design that blends with any interior.

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We are using iron ore at such a rate that the steel industry near the lower great lakes region may have to build plants that can use low grade ore or else move to the East Coast to get imported ores. Similarly, in oil we may become dependent on foreign sources for 60 per cent of our supply within the next few years unless we uncover new techniques. Timber is also decreasing rapidly.

The overall result of this change in our natural resources may require a complete about face in our attitude toward imports and exports; may stimulate the use of substitute materials and new techniques; and may remove from our manufacturing picture many of the materials on which we have depended for generations.

Inflationary Drifts

BUSINESS surveys indicate several factors are focusing their influence on the drift toward inflation in the last half of this year.

Farm products are selling at record highs, bolstering farm income and creating an enormous demand for the products of industry. No relief from present food prices is in the offing because they are supported by foreign purchases and governmental purchases for foreign commitments. Only bumper crops will take the upward pressure off food; otherwise, business opinion looks for higher food prices.

Heavy industries are getting improvement programs in operation and will compete for large quantities of

steel, machinery and construction products. Industrial and retail inventories have been running out; buyers are again in the market.

New demands for wage increases are in process of negotiation; some have already been met. Easing governmental curbs on installment buying brings new buyers into the market for our productive capacity. Each adds to the demand which is stimulating the inflationary drift.

Most surveys show that present price levels can be maintained only by compensating current wage boosts with greater output per man hour.

Housing Construction

THE administration in Washington has received a bad jolt in the unexpectedly small number of housing "starts" in recent months. The principal cause seems to be the unwillingness of buyers to pay present prices. This particular situation seems difficult or impossible to remedy by legislative action.

According to reports reaching Washington, the cost of building materials reached an all-time high at the end of the first quarter and while some items have reduced in price since the first quarter, the increasing rate of output of many building materials must be relied upon to bring building material prices down.

Congress believes that some headway has been made in the reduction of restrictive labor practices and the cost of financing individual houses, and that even a moderate reduction in the cost of housing will increase sales materially.

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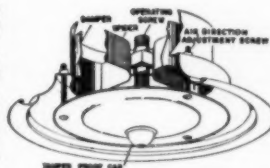
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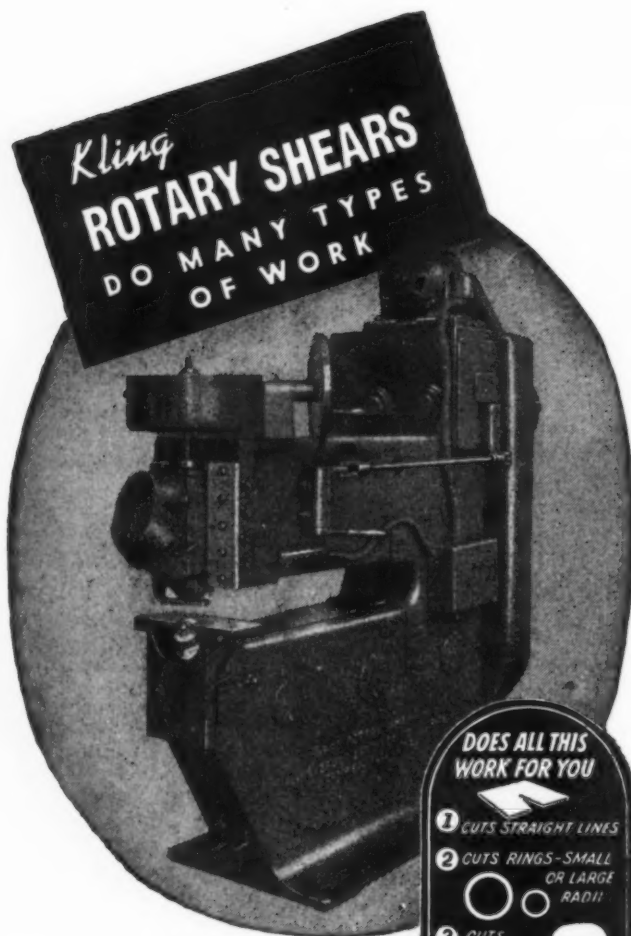
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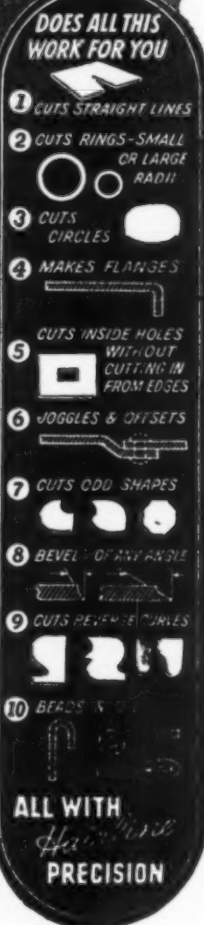
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News Summary

Depression Deluxe

ACCORDING to Dr. W. S. Waytinsky, economist with the Social Security Board in Washington, if the depression materializes, it will be a "depression deluxe—American Model." He points out that we had a war economy deluxe on the American model as well as a reconversion period—also deluxe—without the anticipated volume of unemployment.

As Dr. Waytinsky sees the situation, total production output, in physical volume, is expected to exceed by 25 per cent the best records of peacetime history. On a basis of dollar value, the increase might be as much as 75 per cent. The March, 1947, dollar, however, buys 45 per cent less than the 1941 dollar, says the doctor. This enormous flow of goods will make its influence felt shortly and many prices will gradually recede and supply and demand will take over with supply already exceeding demand in some lines. This means, says the doctor, that production of certain goods will have to slow down and some men will be laid off, but they probably will be absorbed by other industries where demand still exceeds supply. The doctor anticipates that the farmer will probably take a worse beating than will any particular field of production or distribution.

The war economy was conducted in a praiseworthy fashion, points out Dr. Waytinsky, and while the liquidation period is difficult and the national economy is not yet out of the woods, the enormous requirements yet to be filled make it hard to see how a really deep depression can develop.

No one expects the purchasing power of the dollar to return to the 1941 level, but with prices gradually stabilizing and American business and industry looking forward to the next period of uniform activity, it is likely that there will be established an American system which most of the world will follow and a national economy on a higher level of production and wages and prices.

Kruckman — Washington Letter

(Continued from page 61)

year and the volume was increasing every month. Senator Martin said that the demand for steel products for farm and ranch use had increased over five-fold since the end of wartime controls. The greatest need is reported from Minnesota, Iowa, Wisconsin, North and South Dakota, Nebraska and Kansas. The Senator pointed out that the situation is singular be-

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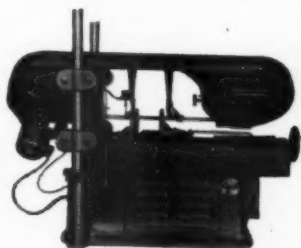
CAPACITY:

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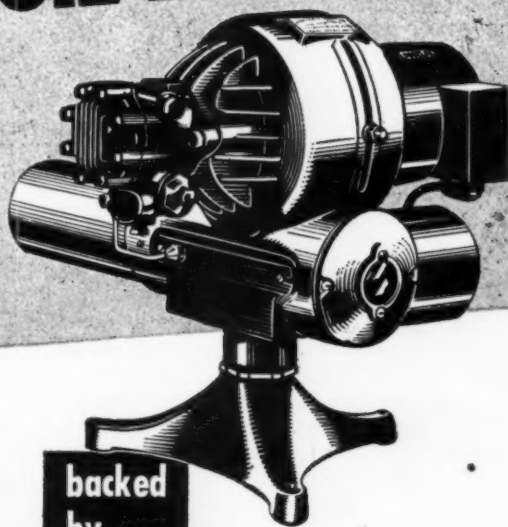
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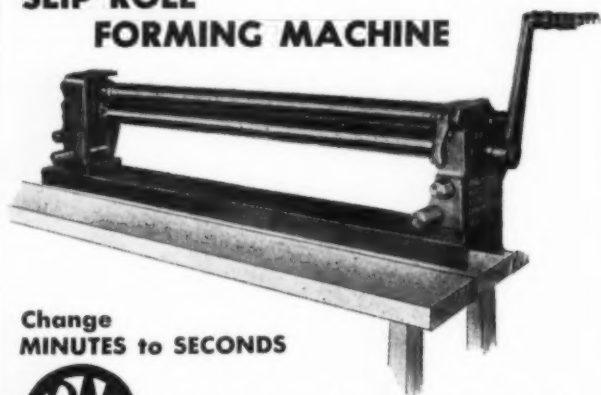
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Jobs that used to use up several minutes can now be done in a few seconds with a Riverside Slip Roll Forming Machine. All adjustments for gauge of metal and curvature of the sheet are made from the front. There is no need to reach around in back to adjust rolls. Another feature of this machine is the new radial adjustment which minimizes flattened area of rolled sheets regardless of curvature. Furnished in both 37" and 31" roll lengths.

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cause the small amount of steel required for pipe alone to relieve the immediate situation for farm wells and watering systems is estimated to be between 10,000 and 15,000 tons. "The situation is critical in respect to all types of steel for all purposes," said the Senator. "The committee will demand remedial action to affect all uses of sheet steel."

Committee Estimate of Need

The committee has reached the conclusion that the production capacity of the United States steel mills is actually 20,000,000 tons short of the domestic needs of the country. But since the need is immediate and it is assumed it will take at least two years to build new plants, the drive will undoubtedly be focussed on the effort to curtail export, no matter what the excuse may be to take steel abroad. The argument that the urgency is temporary and that there will be no need for the increased capacity after the present situation is cleared up, is met by the members of the committee by the suggestion that the upslope of the increase of population in this country is constant and very great, and that the country is so far in arrears in housing and in almost every product of which steel is a component that it will take over 10 years to catch up. In addition, there is the huge foreign market for steel in Europe, in Latin America, and in Asia and Africa, which is expected to more than absorb the production that cannot be immediately used in the United States. It is interesting to learn that the investigators, despite their wide separation ideologically from the New Deal-

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3 THROAT DEPTHS—1 $\frac{3}{4}$ ", 2 $\frac{1}{2}$ ", 6".

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LENGTH OF BLADE—3 $\frac{1}{2}$ "
WEIGHT—11 lbs.
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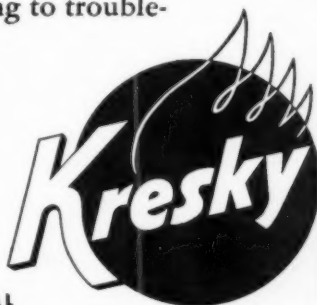
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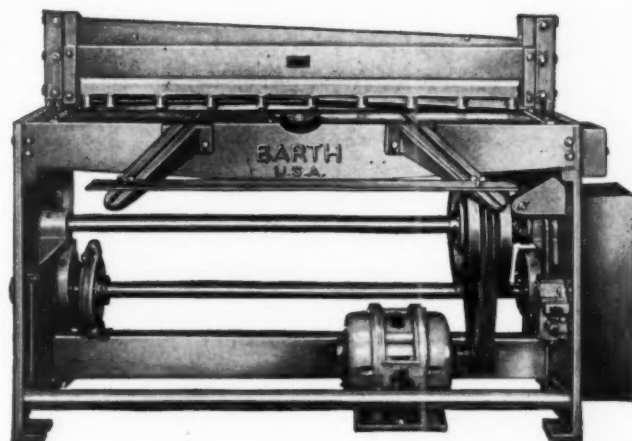
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Absolute finality in design and construction, these 14-gauge Power Shears represent long, careful study of the sheet metal fabricator's needs. Many outstanding features make these shears another progressive addition to the rapidly expanding BARTH line. Available in 52" and 72" sizes.

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The Blades are made of the highest quality tool steel properly tempered and drawn and adjustable for wear.

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ers and other ultra liberals, apparently feel that the chief reason for the opposition to the increase in productive capacity of steel mills is the reduction which will come in the profits of the steel makers.

This motive is assumed to be the main cause for the violent opposition to the effort to place the Kaiser mill in Southern California on the same basis as was provided for the United States Steel mill at Geneva in Utah. The Government-owned mill at Geneva was sold to the U. S. Steel Corporation for 20c on the dollar. The communities of the Pacific Coast have fought actively to obtain the same concession for Kaiser in settling with RFC for the mill at Fontana in California. The desire is to establish a vigorous competition in the region. The RFC has denied the terms to Kaiser. The conflict will undoubtedly be carried to the floor of the Congress. It is probable that special legislation may be enacted to place the Kaiser enterprise on the same footing as the U. S. Steel Corporation plant in Utah.

Government Steel Mills

There is a feeling here, regardless of politics or ideologies, that the national need is to produce more steel with more competition. There is not very vigorous support for Senator Murray's effort to secure legislation to establish Government-owned steel mills with Government funds and under operation of Government employees. The debate now is still statistical, but it threatens to become political and emotional as the need for steel grows more urgent and the pressure

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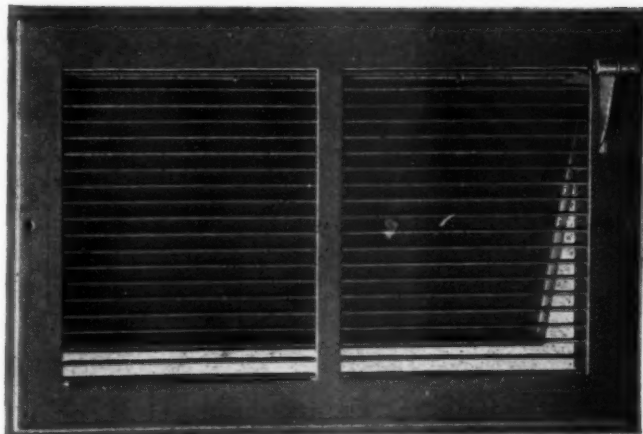
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Performance is the yardstick for measuring the efficiency of any heating plant, and those that will operate year after year with little or no attention are the ones which will return you the most profit.

You're sure of top drawer performance when you install ATH-A-NOR Furnaces and parts exclusively. Over fifty years of furnace manufacturing experience guarantee you home heating plants with performance ratings and lasting qualities to satisfy the most critical clients. Investigate now . . . write for literature.

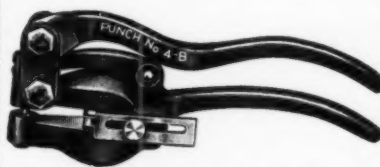
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NUMBER
FOUR "B"
PUNCH

This punch for sheet metal work has a capacity of $\frac{1}{4}$ " through 16 gauge. Weight 3 lb. Length $8\frac{1}{2}$ ". Depth of throat 2". Complete tool includes three punches and three dies of specified sizes with die adjusting key. A time-saver for your up-to-date shop.



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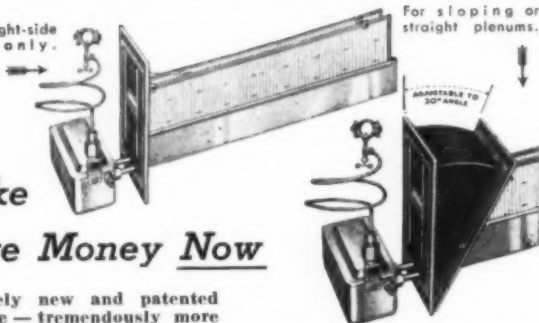
And here's another handy tool for the modern shop—the No. 2 Punch. Length 23". Capacity $\frac{5}{16}$ " through $\frac{1}{4}$ " iron, weight 14 lbs., depth of throat 1-11/16". Punches and dies $\frac{3}{32}$ " to $\frac{1}{8}$ " by $\frac{1}{64}$ ".



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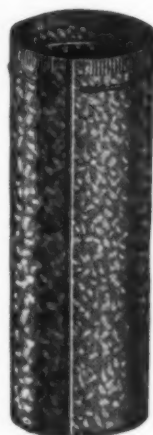
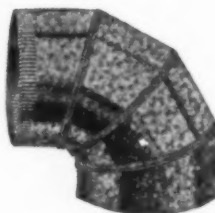
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Warm air pipe and fittings are very important parts of your furnace installations, and the difference between a good job and a bad one is often determined by the kind of pipe and fittings used. Don't take chances on bad customer recommendation... install fittings from Ralph Supply and make your jobs good from the start. We make an honest effort to supply the finest obtainable parts, they'll FIT the first time, they're dependable and competitively priced. Write us today for more information on our complete line of warm air pipe and fittings... we'll send literature at once.



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on Congress increases. The Murray followers contend that the 60,000,000 payroll—the present situation—will continue as a high prosperity economy if the steel is produced upon which this prosperity must rest. Without the steel and expansion of steel production, they predict collapse of the high-prosperity levels. The Murray group tell you, with statistics supplied by Federal mathematicians, that we will need far above 100,000,000 tons of steel by 1950. Production in 1947 is running at the rate of 85,000,000 tons per year. In 1944, the peak year of the war, production ran at the rate of 90,000,000 tons. The Murrayites estimate our steel needs in 1955 at 120,000,000 tons.

The steel industry people, on the other hand, estimate the need at 76,000,000 tons in 1950 and 78,000,000 tons in 1955. The figures reveal that in 1900 a half ton of steel was produced for each person with a job. By 1912-13 the production had risen to a ton for each worker; in 1939 it had risen to 1.39 tons per worker; in 1941, 1.7 tons; the same calculations indicate that between 1947-50 the need would be over 100,000,000 tons to keep 60,000,000 persons employed. The steel industry people work it out at an average of 700 pounds per capita annually. They hold that present production capacity will be fully adequate for at least ten years.

Senator Murray's drive for Government-owned mills will come up for determined and serious consideration at the next session. It is apt to be launched in full panoply at the special session which is expected to be held late in October and in November despite word to

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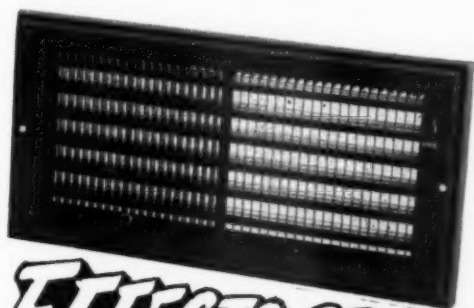
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REGISTERS and GRILLES**
Priced with the Lowest

Prewar quality . . . Adjustable Fins . . . Positive shutter operation . . . Reasonably prompt shipments.

WE ALSO MANUFACTURE A
COMPLETE LINE OF
GRAVITY
REGISTERS AND GRILLES

Prompt attention to all inquiries

EFFECTO-GRILLE

COMPANY
9930 FREELAND
DETROIT 27, MICH.


Dealer profits depend on sales. Sales, now-a-days, depend largely on freeing the customers mind from worry over fuel shortages. That's why we say—investigate this radically new Vapor-Oil furnace,—easily convertible to gas or coal—yes, and even wood if occasion demands.

Immediate delivery

AUTOMATIC FURNACE COMPANY
1111 Race Street Lansing 5, Michigan

VAPOR-OIL

CLEAN - AUTOMATIC - ECONOMICAL

"Made-Rite"

DUCTS

**SMOKE
PIPE**

**FURNACE
PIPE**

**FURNACE
FITTINGS**

You can save yourself time and money and make certain of well-tailored installations by contacting us for your pipe and fitting needs.

We are proud of our reputation and we want to help you fill your requirements with precision fittings . . . **MADE-RITE**. A postcard to us will bring you more information.



"Made-Rite" Co., Inc.
10th & Monroe St. Newport, Ky.

We Built a Better



ROTARY CONCRETE DRILL

**COME ON NOW AND BEAT
A PATH TO OUR DOOR . . . !**

- Makes concrete drilling easy.
- Drills concrete, brick, granite and marble
- Drills 85% faster than star drills.
- Drills precision holes; not deflected by rocks.
- Pulverizing action; no sharp point to wear.
- Used by leading contractors.
- Can be resharpened at nominal cost.
- For use in any rotating drill.
- All standard sizes. 1/4" to 2". Larger sizes made to order.

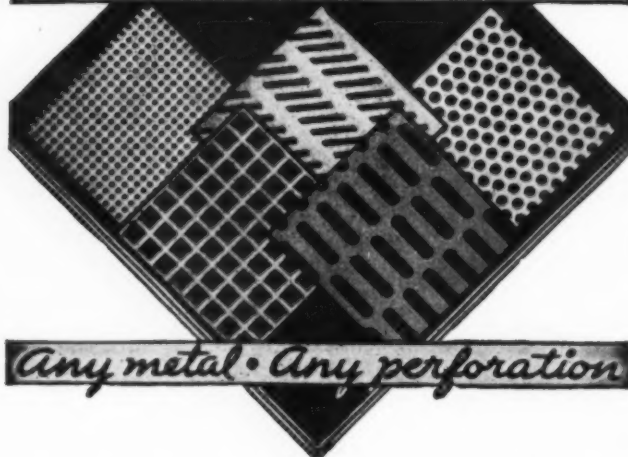
**WRITE NOW
FOR PRICES.**

DEALERS NOW BEING APPOINTED
If your dealer doesn't carry
Rotary Drills, write us

Phone SYcamore 2-4734

Rotary Concrete Drill Co.
650 South Arroyo Parkway
PASADENA 2, CALIFORNIA

PERFORATED METALS



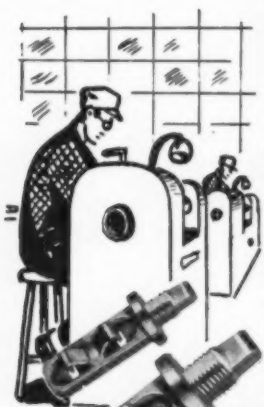
Any metal • Any perforation

H. & K. Perforated Metals are accurately made and embrace a great variety of perforations for use in screening, grading, ventilating and straining of different substances.

Tell us your requirements and we will send booklet showing actual sizes of perforation.

The Harrington & King
PERFORATING CO.

5649 Fillmore Street, Chicago - 114 Liberty Street, New York



GERETT

IS
"WORKING LIKE
SIXTY..."

**TO FILL YOUR ORDERS
FOR "E-Z-ON" DAMPER
REGULATORS**

RIGHT NOW, 30 to 60 days' delivery is the very best we can do in filling incoming orders for "E-Z-ON" DAMPER REGULATORS, in the face of the current overwhelming demand for these widely popular time and labor savers. It seems that furnace and heating contractors, everywhere, are constantly wanting more and more "E-Z-ON" Regulators!



**DAYLIGHT
AHEAD!**

PRODUCTION is constantly gaining — inroads are being made on our tremendous backlog of orders — and it looks as if we can promise the normally prompt GERETT type of delivery service in the very near future. So thanks for your understanding patience.

M. A. GERETT CORP.

Metal Specialties Manufacturers

724 WEST WINNEBAGO STREET, MILWAUKEE 5, WISCONSIN

the contrary. The first step in the Murray program will be the survey to be made under the sponsorship of the President's Council of Economic Advisers, which is headed by Chairman Edwin G. Nourse. The actual survey will be directed by Edgar M. Hoover, professor of economics at the University of Michigan. The plans have been under discussion for some time. The survey will actually start in September. Various Government agencies, including the Department of Commerce, the Bureau of Labor Statistics, the Federal Trade Commission, the Interstate Commerce Commission, the U. S. Tariff Commission, the U. S. Treasury and others will cooperate.

Will Publicity Produce Steel?

As a final word, it may be interesting to know what the un-pinkish, realistic members of the Senate think you might do to help yourself get more steel. They are utterly convinced it is chiefly a matter of publicity, of public relations. They think you can put on the pressure to make the steel producers give you a better supply. They say, in fact, publicity is the only remedy for the present situation. To get this publicity they urge you to write your member of Congress, your Senator, the White House, and go to your local newspaper and explain what it means if you cannot get steel to keep your shop or your plant going. They think your local newspaper will be just as keenly interested in keeping your place open and in keeping your employees in jobs as you are. Their jobs mean business for the local merchandiser, and sales by the local merchant shrink when your establishment is compelled

EASY EXTRA PROFITS
on every Automatic-Heat installation

Lowest Cost
HOME INCINERATION
available!

Low cost and "self-burning" action bring quick sales for this easy-to-install incinerator—especially where automatic heating prevents rubbish-burning in the furnace! Burns wet or dry garbage and rubbish; advanced down-draft action dries the waste constantly. Contents need be ignited only once or twice a week; ashes removed only once or twice per month. Unit is only 2 feet in diameter, less than 3 feet high! Uses any 8-inch flue; will not affect heating-plant efficiency if tapped to furnace flue. Handsome silver-and-blue duotone finish! Write for details!

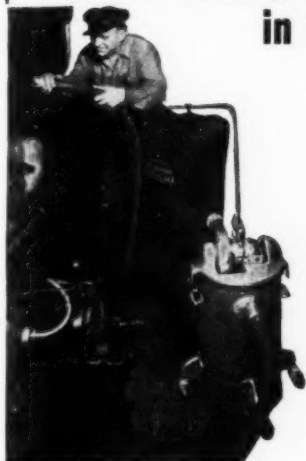
The Majestic Co.
842 Erie Street
HUNTINGTON, INDIANA

Majestic
No. 30 FUELLESS
HOME
INCINERATOR



Nationally Advertised Home Necessities for Over 40 Years.

there's money **FOR YOU** !
in the basement



with the POWERFUL,
PORTABLE
**TORNADO
FURNACE
AND
BOILER
CLEANER**

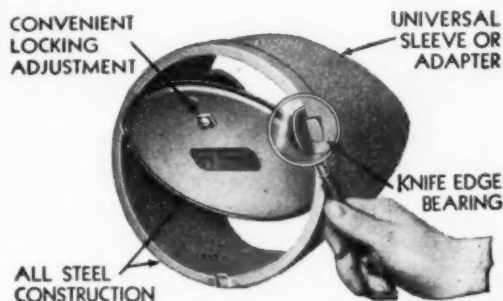
Such suction! Draws out soot and dirt in a quick, steady stream into tight, over-size bag. Fast, thorough work on every job with attachments furnished. Instantly detachable motor-fan unit becomes a powerful portable suction-blower combination for convenient cleaning of registers, radiators, air intakes, pipes.

We help you get business. We furnish tried, proven sales helps for new and repeat business with every outfit. Now is the best time to start. Write today for free literature.

BREUER ELECTRIC MFG. CO.
5082 N. Ravenswood Ave. Chicago 40, Ill.

CONTROL DRAFTS - Step Up Sales!

With C.S.E. Barometric Controls
DRAFT KOREKTOR



TYPE F, 909 AND 912

A precision built, low cost draft control for coal or oil installations. Highly efficient, providing close control for greater fuel savings. Sensitive balanced blade holds draft to ideal minimum. Two sizes with universal sleeves. Easily installed. For standard pipe sizes from 7" through 12".

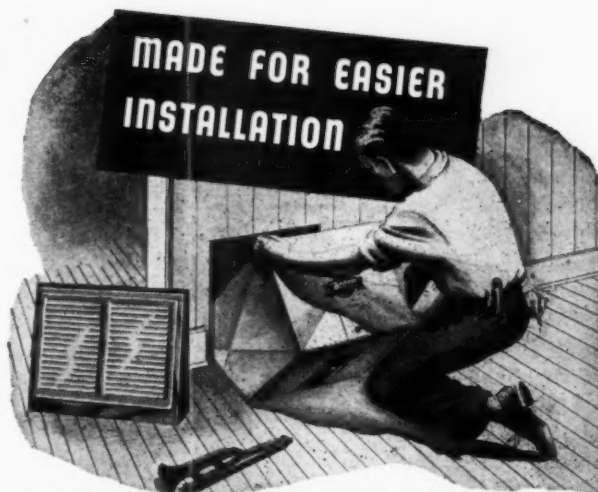
We manufacture a complete line of draft controls including Draft Korektors, Cole Draft Governors and Sullivan Draft Stabilizers.

Order Now for Early Delivery

COLE-SEWELL ENGINEERING CO.

2288 UNIVERSITY AVENUE

ST. PAUL 4, MINNESOTA



THE BARNES BETTER BILT GAS FLOOR FURNACE

The BARNES BETTER BILT GAS FLOOR FURNACE is enthusiastically endorsed by many home owners and builders because of the simple, quick method of installation. It's merely a matter of cutting a hole in the floor and wall furnace-size—then presto! it goes in easily and with a minimum of muss or fuss.

And there are other important, money saving reasons why the BARNES BETTER BILT GAS FLOOR FURNACE appeals to so many builders. There's the heavy 16 gauge heating element—the slotted Port Bunsen type burner—the 26 inch overall depth which requires no pit, no basement—the new, neatly designed non-vision grill—the fact that it meets the latest rigid requirements of A. G. A.

standards for safety, economy and efficiency—and the ten year guarantee that insures your investment.



For further information on the Barnes Better Bilt Gas Floor Furnace write today

BARNES HEATING & VENTILATING CO.
SALES OFFICE 330 E. FOURTH ST. LONG BEACH 2, CALIFORNIA

REPAIR PARTS

for... **STOVES • FURNACES • BOILERS**

also

FITTINGS • REGISTERS • SUNDRIES

and...

**FIVE GREAT LINES
OF HEATING EQUIPMENT**

★ **ARMSTRONG!** ★ **MODERNAIRE!**

★ **LUXAIRE!** ★ **RYBOLT!**

★ **JACKSON and CHURCH**

**YOUR COMPLETE HEATING NEEDS CAN BE
FILLED BY BUYING AT—**

**DES MOINES
STOVE REPAIR COMPANY**

SAM C. GREEN
FRED R. GREEN

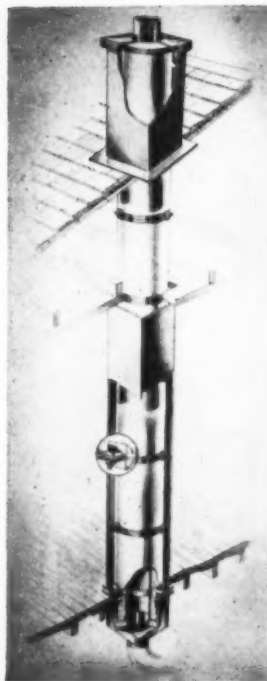
DES MOINES, IOWA
SINCE 1869

Announcing the VAN-PACKER CHIMNEY

- Listed by Underwriters Laboratories for all fuels—coal, oil, gas, etc.
- Lightweight—suspended from floor or ceiling.
- Low-cost. 20% to 50% less than brick.
- Safe. Fully tested by U. L. for extreme firing—any fuel.
- Complete. Shipped packaged, all parts, ready for installation.
- Better draft. Keeps the heat inside the chimney.
- FHA and building official acceptance.
- Job speed-up. Packaged to be delivered to each house on projects. Installation—3 to 4 man hours.

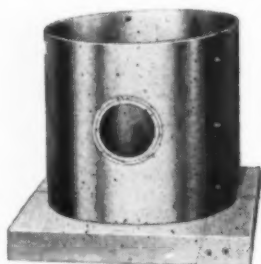
EASY AND SIMPLE INSTALLATION

1. Cut holes in floor, ceiling and roof.
 2. Drop support in hole and nail to joists.
 3. Set sections with Van-Packer cement and joint clamps.
 4. Nail roof housing to roof.
 5. Set cap on housing and fasten with sheet metal screws.
- (If utility room heater is used, chimney is suspended from ceiling directly over heater.)



VAN-PACKER CORPORATION

FIELD BLDG., CHICAGO 3
Phone Randolph 1840



Made in U.S.A. Pat. No. 2,341,622

Pemco 3-in-1 Combustion Chambers meet every dealer's requirements:

- Excellent profit.
- No need to carry three sizes of fire boxes in stock or to the job.
- Installed easily and quickly in any domestic burner or furnace.
- Enormously improved furnace performance makes customers enthusiastic.

Limited quantity available. Order immediately. Satisfaction guaranteed. For more information, send for technical bulletin.

Distributors Inquiries Invited.

—PEMCO—

Petroleum Equipment Mfg. Co.

P. O. Box 1533

NEW HAVEN 6, CONN.

READY TO SHIP!

ONE-PIECE STAINLESS STEEL PEMCO 3-in-1 Fire Boxes

This one chamber adjustable from 1:00 G.P.H. to 2:25 G.P.H.

FOR
REPLACEMENTS
CONVERSIONS
NEW INSTALLATIONS

to close for lack of steel—not for lack of business. They think here if that aspect of the whole economic problem is introduced to Congress from the grass roots, Congress will go over the Marshall Plan with a fine-tooth comb before it permits so much steel to go abroad that the smaller units of the economy must close for the lack of the metal that goes abroad to rehabilitate Europe and to make the world safe for Communism.

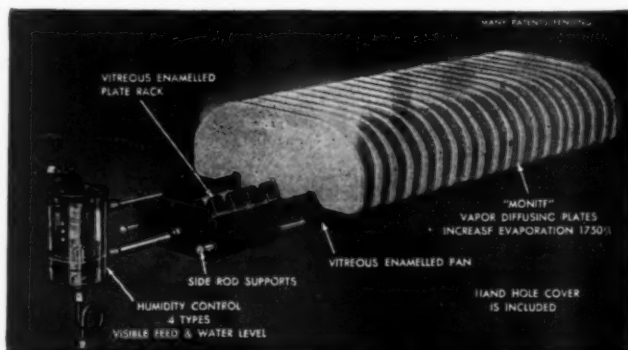
AA Oil Supply Report

(Continued from page 77)

to alleviate local shortages.

6. Cooperate to the fullest extent with local fuel oil distributors in your area with respect to filling tanks at the earliest possible date, procuring assurances for adequate supply for new oil burner installations and locating inefficient and defective heating equipment.

The petroleum industry anticipates that it can sustain about 15 percent additional gallonage in many areas. However, this should not be interpreted to mean that it can sustain all-out oil burner sales programs in any area even though supplies appear to warrant such promotional activity. Evidence indicates that the industry will expend utmost effort to rectify any distributional unbalance that may arise, for to do otherwise would jeopardize the future of the petroleum industry in the domestic heating market.



MONMOUTH HUMIDIFIERS

• This accessory is really an outstanding PROFIT ITEM for any dealer! You do not have to carry a large stock—with three sizes selected from the entire Monmouth line, you cover about 80% of all installation requirements. Get our price on this 3-package kit, with your recommended sales price, and then figure up the nice profit you have every time you put in a Monmouth. Installing a humidifier alone is a profitable job, and when added to furnace repair, reset or replacement work, it is doubly worth while.

Every warm air system, new or old, needs healthful, automatic humidification. For dependable service and trouble-free efficiency, Monmouth leads them all—correctly engineered, conscientiously built—no headaches afterwards. We also make Monmouth Humidity Conditioners for all radiator jobs. Details and prices on request.

THE CLEVELAND HUMIDIFIER CO.

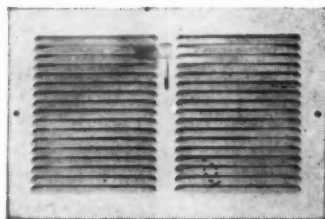
7802 Wade Park Ave., Cleveland 3, Ohio.

NOW IN PRODUCTION!
PROMPT DELIVERY

STANDFORATED
 PERFORATION OF ALL METALS

**FORCED AIR
 REGISTERS
 and
 GRILLES**

Sidewall and Baseboard
 Four Sizes
 8x6 - 10x6 - 12x6 - 14x6



**PERFORATED METALS
 FOR EVERY INDUSTRIAL USE**

WRITE FOR COMPLETE CATALOG

STANDARD

STAMPING &
 PERFORATING CO.

3137 W. 49th PLACE

CHICAGO, ILLINOIS

Solve your oil burner problem
GREATER OIL BURNER SALES



HEATCRAFT COMPANY
 VAUGHAN BLDG., LOUISVILLE, KENTUCKY

*Check with
 Northwestern
 first!*

That's the most certain way to save yourself a lot of time and trouble in your search for furnace repair parts. Northwestern has a reputation for superior service to uphold—and quick, reliable service on the smallest and largest orders is the way it's accomplished. Check with us first—it's been done for years by the most successful and aggressive repair men.

SEND FOR OUR NEW FURNACE REPAIR CATALOG.

NORTHWESTERN STOVE REPAIR COMPANY
 662 West Roosevelt Road Chicago, Illinois

FOR USE ON EVERY ROOF
ELATERITE
 MINERAL RUBBER COATING

... available from
PROIE & COOGAN

There's plenty of roofing business for the aggressive contractor these days. Schools, garages, stores, homes, etc., all present a ready and lucrative market and all can be covered to the same high standards with ELATERITE. Here's a tough, lasting, roofing compound which flows smoothly and evenly, leaving an ebony black coating, completely poreless and water-tight. Elaterite seals all cracks and crevices and is unconditionally recommended for roofs of metal, gravel, or composition.

Write us today for literature and in the meantime look around for these highly profitable jobs. When you get them, we'll supply your needs promptly.

PROIE & COOGAN HEATING CO.

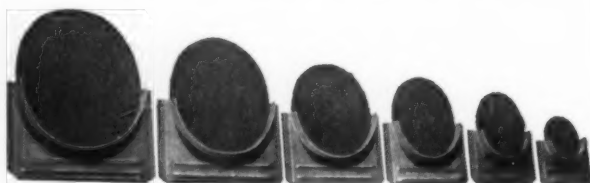
WHOLESALE DISTRIBUTORS FOR INDOOR
 COMFORT SUPPLIES • ROOFING MATERIAL

6117 BROAD ST.

PITTSBURGH 6, PA.

Montrose 9300-01

SOMETHING NEW



IN BLAST GATES

MODERN IN DESIGN—
BUILT FOR TOP EFFICIENCY
— PRESSED STEEL
B L A S T G A T E S

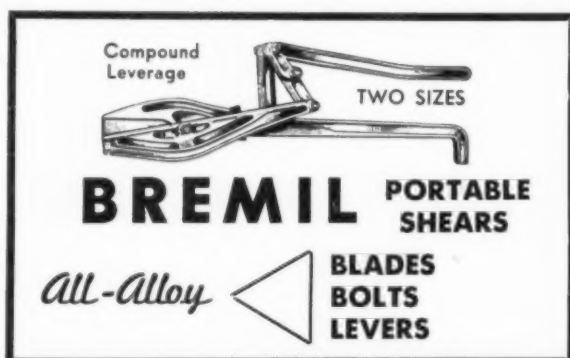
For particulars write for Bulletin No. 35

Inquiries Invited from Jobbers and Distributors

Rees Blow Pipe Mfg. Co.

340 SEVENTH STREET SAN FRANCISCO 3, CALIF.

For Fast, Easy Cutting



On the Job • In the Shop

ALL-ALLOY No. 2 cuts up to 1/4" steel plate.

ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.

Your work will proceed faster and neater when you use Bremil All-Alloy Portable Shears on the job or in the shop.

LONG-LIFE BLADES—removable cutting blades are made from finest grade ALLOY (Shear Blade) Steel which has been properly heat treated, accurately machined and surface ground. Special blades available for cutting stainless steel.

WRITE TODAY FOR DESCRIPTIVE LITERATURE

BREMIL MANUFACTURING CO.

1800 Pittsburgh Avenue

ERIE, PA.

Rochester Specifications

(Continued from page 80)

cycling gas valves are used. Never install limit controls in transformer line except when non-re-cycling valves are employed.

Room thermostats should never be installed on outside walls or in close proximity to heat pipes or ducts and never higher than 4 feet above the floor. 3'6" is preferable.

Color Mixing and Matching

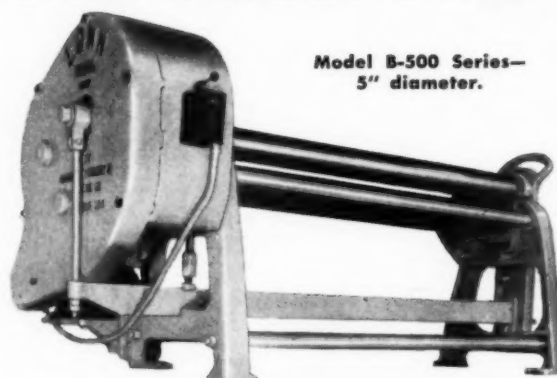
(Continued from page 94)

already have a red cast. Vivid greens are made by mixing such blue pigments as Prussian, cerulean, or chromium oxide, which have greenish hues, with light chrome yellow or lemon yellow.

Familiarity With Pigments Essential

As can be seen from the foregoing, in order to get the desired color for his finishing materials, the finisher should have a fairly good knowledge of the characteristics of the more important pigments. To aid in acquiring that knowledge, small amounts of these pigments should be spread on a white slab so that their true hues or colors are revealed. Added knowledge regarding them can be obtained by taking several different pigments, including blacks, browns, and greens as well as the reds, yellows, and blues, and mixing them with white. The various reds, for instance, will

LOWN SLIP ROLL FORMING MACHINES FIT YOUR JOB!



Model B-500 Series—
5" diameter.

If you want MORE PRODUCTION and ECONOMICAL OPERATION, use LOWN Slip Roll Forming Machines.

Our machines are designed for sturdiness and ease of operation to provide peak productivity.

Rugged — Rigid — Attractive — Prompt Deliveries.

The LOWN Slip Roll Forming Machines are built in a range of sizes from which you can choose the exact unit for your requirements.

SAN ANGELO FOUNDRY & MACHINE CO.

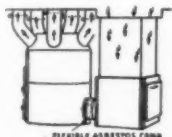
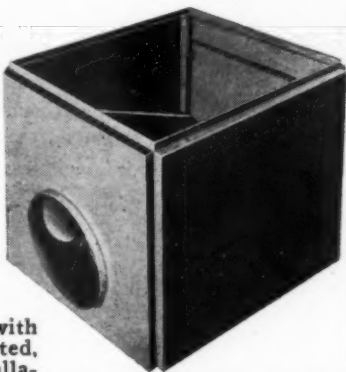
San Angelo, Texas E. Upton & SFE Tracks

Distributors in Most Principal Cities — Write for Bulletins.

CONVERT HOT AIR FURNACES TO WINTER AIR CONDITIONERS WITH

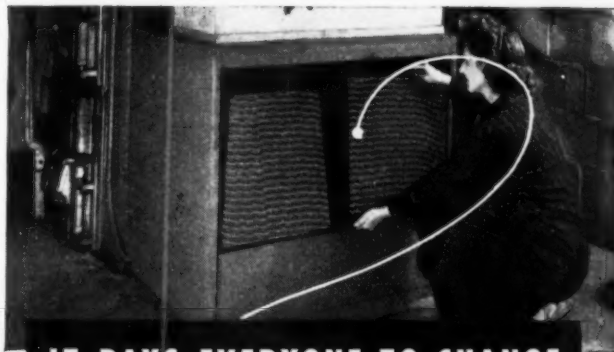
the Economy FAN FILTER CABINET

Here's an *extra quiet* operating fan filter unit especially designed for converting 18" to 26" gravity furnace installations. Cabinet 27"x27"x28", green baked enamel finish with 25½"x18" service door, two 25"x20" Dustop filters, special heavy duty, non-overloading motor, overlapping pressure type propeller. Shipped completely assembled. Asbestos cloth connection with two metal rings, as illustrated, furnished for easy installation. It has the lowest *initial* and *operating* cost of any similar unit on the market and is the unit you need for more *business* and more *profits*. Write us today for literature.



NATIONAL ENGINEERING & MANUFACTURING CO.

213 West 19th Street Kansas City 8, Mo.



IT PAYS EVERYONE TO CHANGE TO DETROIT AIR FILTERS

For your customers, Detroit Air Filters mean . . .

- Low maintenance cost
- Maximum dust-collecting efficiency
- Minimum air resistance
- Greater dust-carrying capacity
- More uniform performance
- Greater economy and long life

Sold only through the warm air heating, ventilating and refrigeration trades, Detroit Air Filters are recognized as dependable products that mean more profits for you. Write for illustrated booklet.

DETROIT AIR FILTER COMPANY

1228 West Kinzie Street, Chicago 22, Illinois

BETTER
DELIVERY

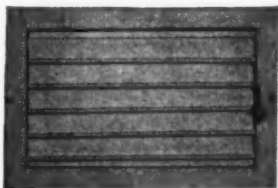
VICTORY REGISTER (STYLE V)

MODERATELY
PRICED

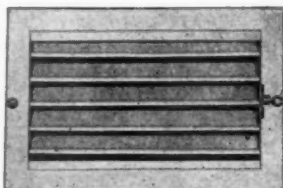
A ONE-PIECE REGISTER OF STURDY CONSTRUCTION

PERFORMANCE

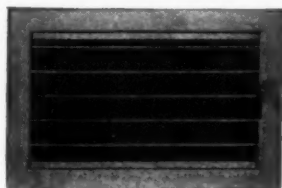
Up-Down deflection as required for "Good Practice" rating by "YARDSTICK" published by National Warm Air Heating and Air Conditioning Association.



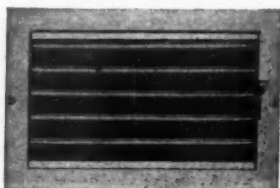
CLOSED



DOWN DEFLECTION



STRAIGHT



UP DEFLECTION

Write for Catalog #12 showing all types
of Air Conditioning Registers and Grilles.

REGISTER & GRILLE MANUFACTURING CO., Inc.
66 BERRY STREET BROOKLYN 11, N. Y.

Profits!

Through the

SUPER-THERM

Combination

OIL BURNER



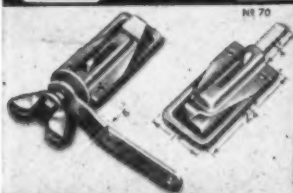
SALES PROSPECTS for this modernizing, easily installed oil burner are *all* owners of wood and coal stoves and ranges. Super-Therm fits any size stove, front or rear—will last a lifetime—will not soot or smoke—has automatic safety features. Write now for details and *dealer profit* facts.

THERM OIL BURNER CO.

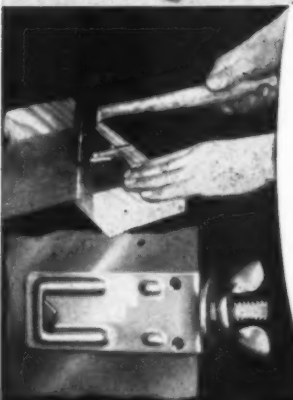
Pioneers of the Oil Burning Industry

2105-D WESTLAKE AVE. SEATTLE 1, WASH.

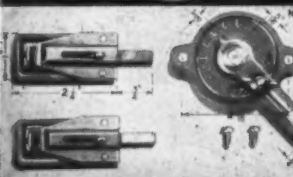
H&C KWIK-WAY DAMPER REGULATOR SETS



Most Easily and Quickly
Attachable Sets on the Market
**STURDY • RATTLE-PROOF
NO ANVIL REQUIRED
IDENTICAL 5/16"
RETRACTABLE BEARINGS**



Simply slip the bearing over the edge of the damper at the bearing line. Lay on any firm surface and strike one solid hammer blow. The prong pierces the damper and is clinched securely in place by the heavily ribbed underside construction of bearing. Fastening is permanently solid, rattle-proof. Identical bearings with retractable bolt make easier installation of regular or splitter dampers in round or square ducts.



LIST PRICES

No. 70 Set \$0.30
No. 77 Set 0.40

FOR LARGE DAMPERS

No. 50 3/4 Set \$0.60
No. 80 3/4 Set 0.60

See your jobber or
write for literature.

HART & COOLEY MANUFACTURING CO.
HOLLAND MICHIGAN

Users Claim:
• up to 100% more work
• and stronger welds

Designed for **Precision and Production**

**Spot Welding of
Light Gauge Metals**

• 14 to 25 Gauge

This is a new and versatile, air operated, plunger type, electronically timed, water cooled, spot welder. On the job, this sturdy welder unit is performing with unbelievable speed.

Send for Weldex
Bulletin #76A.



Model 752—P

Weldex Int.

Manufacturers of Precision Welders for Light Gauge Metals
7359 McDONALD AVE., DETROIT 10, MICHIGAN

produce some interesting tints. When Venetian red is used as a tint in the white, a suggestion of yellow is produced, while Indian red gives a grayish purple hue, and Tuscan red produces a lavender tint. Rose pink with white shows a grayer color than does rose lake.

Grayer tints also are produced by cobalt blue and ultramarine than by Prussian blue when mixed with white. When working with the siennas and umbers, it will be found that greenish yellow hue is produced by adding raw Italian sienna to the white while burnt sienna shows a red-tan. Raw Turkey umber in white gives a decided greenish gray tint, but a warm gray having a suggestion of orange is produced by the burnt umber. Van dyke brown, on the other hand, shows purplish gray when mixed with white.

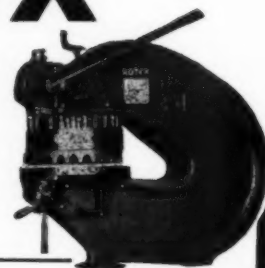
Many gray tones, as is well-known, can be made by mixing black and white pigments and the resulting grays will vary in brightness and hue depending upon the amount and type of black pigment used. Blue grays are made by incorporating lamp black in the white, while vegetable black, ivory black, and drop black give brownish grays. More attractive gray tones having somewhat greater warmth of color, such as French gray, pearl gray, and silver gray are produced by adding small amounts of yellow, red, or blue.

Comparing Colors

When it comes to making color comparisons, the National Bureau of Standards recommends that the objects being compared be illuminated with equal amounts of the same quality light. The color standard and the object to be matched or compared with it should

ROTEX

QUICKCHANGE PUNCHES



18 TIMES FASTER
Because:

Seventeen punches and 2" nibbling shears are mounted in revolving turret head ready for instant use. Punches range from 5/32" to 2".

THE ROTEX 18

has proved its worth in hundreds of small shops as well as in the huge plants of Douglas Aircraft, Fisher Body, R.C.A. Victor and other nationally known concerns. The Rotex 18 can do a faster, cleaner and more profitable job for you!

WRITE FOR INFORMATION

ROTEX
PUNCH COMPANY
4726 E. 12TH ST. OAKLAND, CALIF.

YOUNGSTOWN FITTINGS FIT!

IT ISN'T mere happenstance that makes our statement correct. We plan our products, pipe and fittings for gravity and winter air conditioning, so that they "go in" with a minimum of time and change. We'll be getting more metal soon (we hope) and want you then to ask your Wholesaler about our lines.

YOUNGSTOWN FITTINGS FIT

YOUNGSTOWN FURNACE COMPANY

627 Marshall Street

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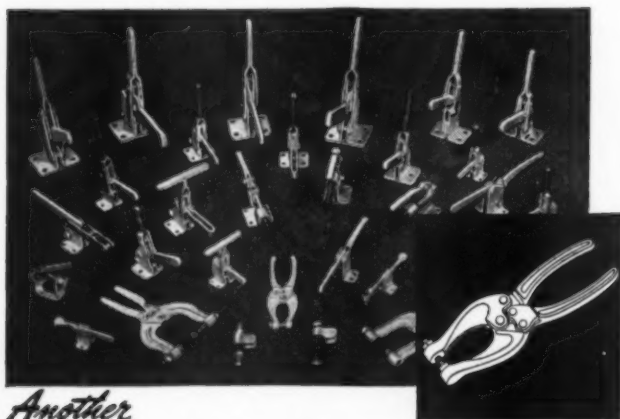
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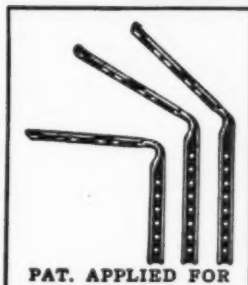
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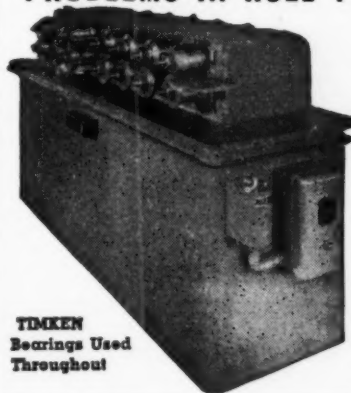
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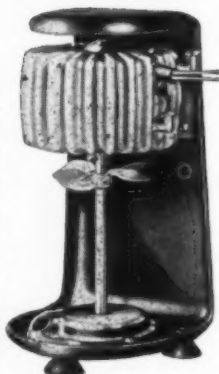
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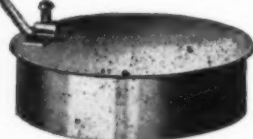


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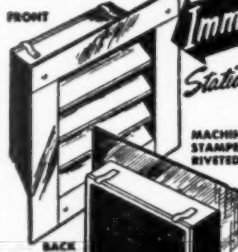
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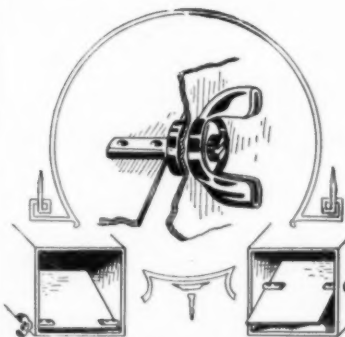
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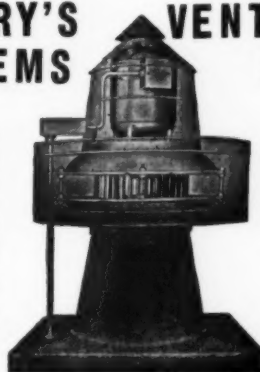
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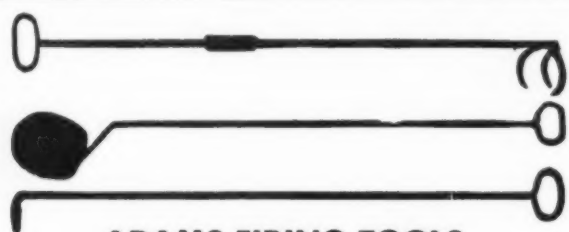
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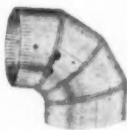
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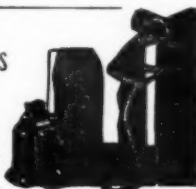
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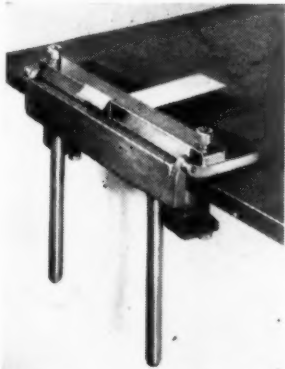


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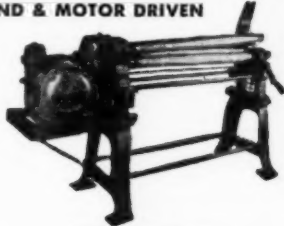
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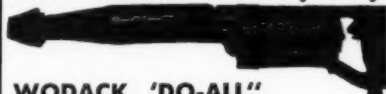
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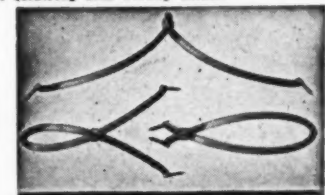
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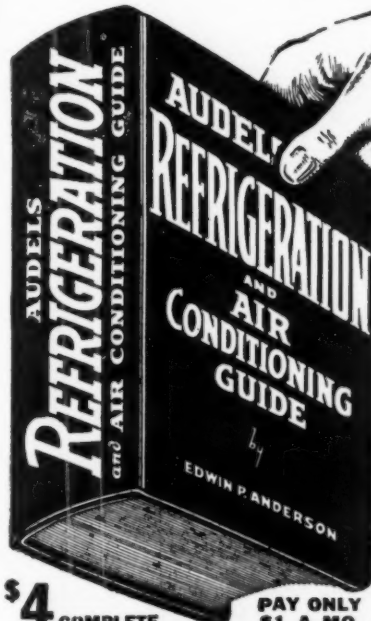
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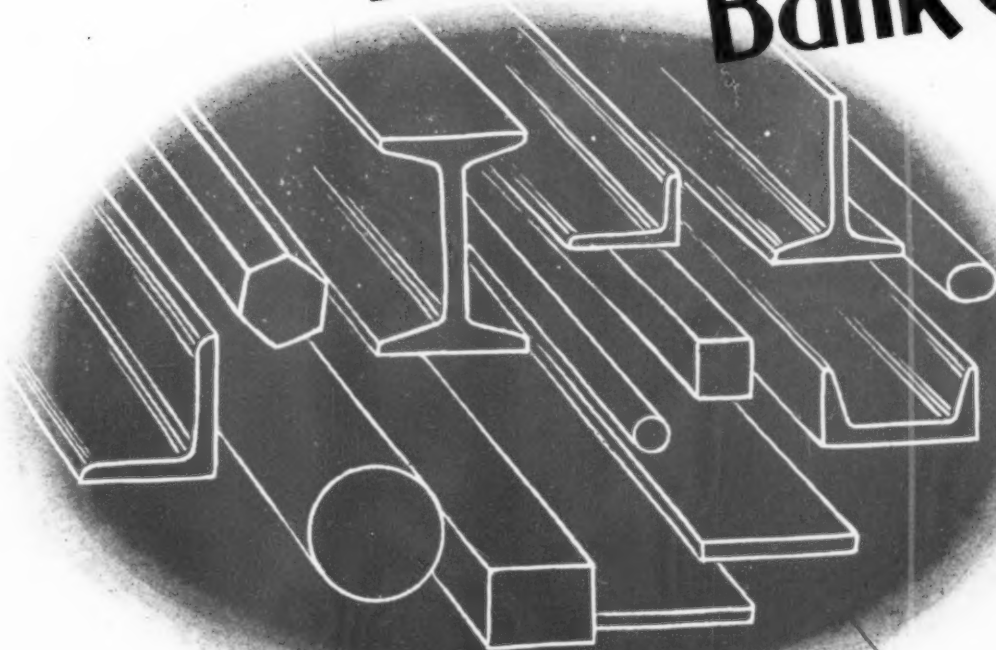
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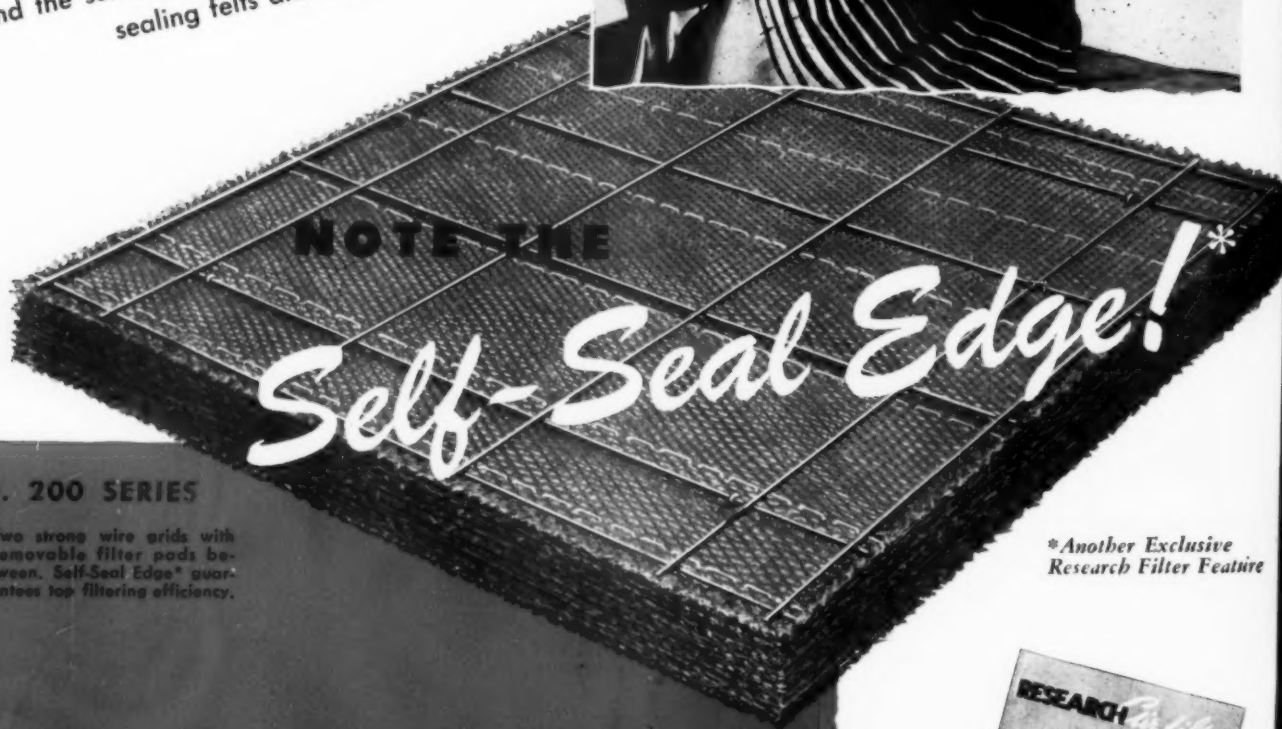
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